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Betterment Expected

Actual Demand for Iron and Steel Little Changed Pig Iron Buying at Lower Prices, with Activity Greatest in Eastern Districts

The feeling is general that iron trade conditions, while they may not change decidedly for the better in the near future, are not likely to grow worse. Consumption in all lines apart from the railroads has been maintained with steadiness in the past two months, and it is expected that whatever improvement comes this year will be almost exactly measured by the business the railroads place. Rail requirements for 1911 are being made up, and in the case of several important roads will be close to the total taken this year, with the proviso that the outcome of the rate hearings is such as to strengthen railroad credit.

The Steel Corporation's report showing earnings of \$37,365,000 for the third quarter of the year, or only 7 per cent. less than for the second quarter, was better than might have been expected from the slowing down of output since the middle of the year. The comparison is favorable, also, with the third quarter of 1909, when with a larger output at somewhat lower prices the total was \$38,247,000.

For the fourth quarter a considerable falling off is to be expected in earnings; as to unfilled orders the same can be said unless large rail contracts come in to offset the steady reduction in other products. The Steel Corporation is now operating 65 per cent. of its blast furnace capacity, 48 furnaces being idle, against 45 at the opening of the month.

Pig iron buying has increased in the past week, but again prices have suffered, and another has been added to the succession of bottoms. Activity has been greatest east of the Alleghenies, Buffalo furnaces taking a good share of the business in foundry grades. Pipe works and stove works in eastern Pennsylvania have bought round lots. Several important buyers are asking for iron for first quarter and first half of 1911, and Northern furnaces are selling for those deliveries at 1910 prices, while Southern furnaces are holding for 25c. to 50c. more.

Foundries have been coming into the market in series, and the demand is thus spread out in a way most to the advantage of the buyer. For months there has been no concurrence of inquiry from many directions—the sort of inquiry on which prices advance or at least stiffen.

The market for steel making pig iron staggers under heavy accumulations in Central Western furnace yards. A sale of 3000 tons and one of 5000 tons of basic iron are reported for the first quarter of 1911, at delivered prices netting less than \$13, at Valley furnace.

The market for billets and sheet bars is very weak and leading makers are more aggressive. In one case open hearth sheet bars have been offered at \$24.70, delivered at Pittsburgh.

In steel products the rate of new business is little changed. Wrought pipe mills find a good demand for so late in the year. In line pipe two contracts have been closed, one for 15 miles of 6-in. pipe and the other for 8 miles of 2-in. pipe.

Plate mills are figuring on 10,000 to 11,000 tons of plates and shapes for the new battleship to be built by the Government and 2500 tons of plates for torpedo boats.

The American Sheet & Tin Plate Company is operating 85 per cent. of its capacity and turning out the largest product in its history.

Rail orders include 3500 tons for the Erie and 5000 tons for the Pennsylvania for this year. Two Western roads are in the market for 1000 cars each.

While steel bars are held at 1.40c. in Pittsburgh territory, delivered prices have been made on some shipments farther west netting 50c. to \$1 a ton less at mill.

In structural lines there is some slowing down. The building season is drawing to a close, and railroad bridge work is not expected to come out in large volume soon. The Long Island track elevation work, nearly 12,000 tons, as finally decided, has been awarded to the Fort Pitt Bridge Works. The Quebec Bridge Commission may take another month to consider the various designs submitted. On the commission's design the award seems to lie between the British and Canadian works, on the score of price.

While coke for spot shipment has sold at \$1.50, a sale of 15,000 tons for November is reported at \$1.55, and 15,000 to 20,000 tons was taken for the first half of 1911 at \$1.75 for furnace coke.

Lake ore shipments are tapering off and 75 per cent. of the fleet will stop by November 15. The total for 1910 is now put at close to the 1909 figure, which was 42,600,000 tons, while early estimates were around 50,000,000 tons.

Co-operation in International Steel Trade

The officers of the American Iron and Steel Institute can take much satisfaction from the success of their first undertaking. They set out to hold a conference with European manufacturers of iron and steel and to have them as their guests during the meeting and for some days following, on a trip covering important steel producing districts of the United States. All the carefully laid plans have been carried out in a way more than meeting expectations. The foreign delegation was not as large as it would have been had not the time appointed conflicted with the annual meetings of important companies abroad, but it was representative. Its members were given an opportunity to meet the leaders of the American steel trade and for some days to share with them the experiences of travel and observation of steel works construction and practice in the United States. The enterprise of local committees made them well acquainted with the progress and standing of three important industrial cities, albeit some of the literature put in their hands showed the touch of the American booster.

As indicated in what has already appeared in these columns this last party of European iron and steel manufacturers to visit this country was unique in being composed almost entirely of representatives of the commercial side of the industry. Heretofore the oper-

ating or engineering departments have been represented in similar excursions. The fact was not disguised that a definite object was aimed at in inviting the foreign guests. President Gary's address at the meeting of October 14 plainly said that the policy of co-operation which has been to some extent operative in the domestic steel industry could be and should be extended to the relations of American steel manufacturers with foreign manufacturers. "They will meet us half way," he said, and the foreign guests who spoke at the New York and Chicago dinners freely confirmed Judge Gary's confidence. Some of them said, speaking for their own companies, that they would willingly co-operate in Judge Gary's proposals whenever called upon. G. Scoby-Smith, a managing director of Bolckow, Vaughan & Co., Ltd., of Middlesbrough, England, said of the value of international conferences between commercial heads of the steel industry:

They not only enable the producer to have the advantage of the experiences of the best appointed works, but they permit us to exchange such information as to supply and demand as to prevent overproduction or undesirable scarcity, and hence possibly inflated prices. So far as the gentlemen present from England are able to represent the English views, I believe we are in accord with the idea that arrangements of this character are to the advantage of all. . . . Possibly in the near future these gatherings may prove the need of an international iron and steel institute, at which the discussion of commercial and technical questions may be a feature. I am sure that a policy of friendly conference for the exchange of views and experience on such matters can do much to remove the sharpness of undue competition.

Speaking also at the Waldorf-Astoria dinner, Sir John S. Randles, of the Workington Iron & Steel Company, referred to the new era of friendly co-operation as having possibilities beyond anything that could be accomplished by \$17 rails:

We talk about the time of \$17 rails, and you may do so if you like, but what does it mean? It means that when that policy of \$17 rails was inaugurated it represented more misery than was caused by the bloodiest battle. It meant an industrial army laid aside and the workers deprived of their sustenance. It meant loss of industry that ought to have been maintained. It meant disaster worse than war. It was war in commerce and a régime which could not prevail.

Then he added: "I believe our gatherings together in this manner will stop the destruction caused by the juggernaut of cheapness, which strikes at the happiness of thousands of our fellows." From the representatives of the German steel industry also came expressions favorable to co-operation. E. Schaltenbrand, chairman of the managing committee of the Stahlwerks Verband, spoke of the benefits already realized from a frank exchange of views and explanations of business policy by those engaged in the international steel trade. Baron von Bodenhausen, of the Krupp works, while asserting the continuing vitality and potency of competition, believed that for competitors in the international steel trade to come together and to know and esteem each other would keep their competition sound, on a high level and within reasonable limits.

These expressions and the friendly reception given to Judge Gary's views by the British manufacturers whom he met at Sheffield, England, last year and at London previously, indicate plainly that the policy of co-operation is making headway. Moreover, what counts more than the friendly utterances of social occasions, various departments of the international steel trade are now conducted on a basis practically exemplifying the co-operative principle. There can be no

doubt, too, that the New York meeting will result in its further extension.

It might be suggested, since the United States Steel Corporation does almost all the export steel business from this country that it, rather than the so-called independent steel companies, is interested in co-operating with foreign producers. However, even steel companies engaged wholly in the domestic trade must have the liveliest interest in any policy which permits the marketing at a profit of an increasing proportion of the total production of American steel in world markets.

As to the practical form the friendly sentiments expressed at the New York meeting will take in the struggle for orders in outer markets, time will give more light. There will be objection to leaving to manufacturers in any industry to decide what is a "fair and reasonable" price for their product. On the other hand are the unreasonable levels reached in boom periods under the operation of so-called "natural" laws, and the profitless prices which result from cut-throat competition induced by producing far in excess of the market's ability to absorb. Somewhere between the two lies tenable ground.

There is one factor in the international steel trade which cannot be ignored in any practical consideration of co-operation by manufacturers. By a striking coincidence it was referred to in two papers read at the October 14 meeting in New York. Mr. Kirchhoff, reviewing the Düsseldorf Congress, said that basic conditions in the steel industry of the United States and that of Europe are steadily approximating. Labor is growing dearer in Europe, so that the industry there must have, and is adopting, American labor saving methods and equipment and reaching the American standard of output. On the other hand the United States is looking after economies in the European way—in the use of steam, blast furnace gases and the products of coke making. Mr. Farrell laid stress on the fact that well equipped works in the industry, wherever located, show little differences in advantages, when all is summed up. It is not, therefore, a case of nursing crippled concerns or of bolstering the weak, but rather of preventing the strongest from using their strength to destroy each other. It is also the abolition of the old-time strategy of preventing a rival from taking business even at severe loss to one's self. Thus viewed the new movement is far from having the odious aspect of monopoly.

But when all is said, the real test of this undertaking of the American Iron and Steel Institute is in its fruits. If at the same time that it benefits its members and their foreign competitors, it benefits the consumers of steel and the army of men employed in the manufacture of steel, it will prove itself one of the great conserving forces of modern industry.

The High Price of Pig Tin

The excitement in the pig tin market during the last two weeks has kept consumers in need of a supply in a highly nervous state, and the uncertainty as to future prices is the cause of further anxiety. This state of affairs is lamentable because of the fact that the existing situation is largely, if not wholly, due to the operations of people who are not directly interested in either the production or the consumption of pig

tin. In other words, the market here is in the hands of speculators who have been more farsighted than the consumers, and the latter are contributing to the bank account of people whose only interest in the market is to influence price fluctuations.

While it is generally admitted that pig tin is in relatively better demand than other metals, there seems no doubt that with spot tin prices hovering dangerously near 38 cents a pound, the market is inflated and the metal has a fictitious value. Of course the London syndicate of speculators has helped to send the market upward here, but it will be remembered that late in August, when stocks were tightly cornered in London, this market did not respond to the violent fluctuations there, and pig tin for October delivery could be had as low as 34.50 cents. Shortly afterward the corner in the American supply of tin developed, with the result that the price of October tin early this week was put up to 37.62 cents. It may be well to state that the leading American consumer has not participated in this corner, but, on the contrary, endeavored to break the market in London by shipping tin there and has tried to relieve the tension here by selling to other American consumers.

It is not necessary to enter into a discussion as to the statistical condition of the metal to find the basis of these high prices. It is true that the limited supplies here have assisted the speculators in putting up the market, but nevertheless the present prices are artificial and brought about by speculative interests. The only remedy for this is for consumers to study the market more closely, in order that their purchases may be made at more normal prices. A close watch should be kept on the speculative buyers and sellers of tin by those who actually use the metal, and a more intelligent study of the conditions relating to production and consumption would go far toward keeping the market in better balance.

A Prosperous Year for Farmers

One of the encouraging features of the business situation is that the farmers of the United States have enjoyed an unusually prosperous year. The wheat crop has made about an average yield and commands a good price. The oats crop, an important item in cereal production, is understood to have surpassed all former records. There were unfavorable reports during the early summer regarding corn, but August and September proved ideal months for maturing this cereal, and it is estimated by good authorities that the yield and quality are the best the country has ever produced. In the South the cotton crop is somewhat short in yield, but brings a high price which assures large returns to the planters. On the whole, the year has undoubtedly proved the most profitable in the history of American agriculture.

Rumors of speculative tendencies among the farmers contributed materially to the disquieting literature that was in circulation early in the year. It was charged that they were mortgaging their farms to buy automobiles in their efforts to emulate the style of city folks. Later investigation disposed of this rumor, as it was found that the farmer seldom purchased an automobile except for cash. While many people in the cities and smaller towns have strained their moderate incomes in order to maintain their social or business

position in the community, the farmer gets a valuable service from an automobile which makes it an asset rather than a liability to him, and there have been few cases where his investment is a matter of concern to the public.

A more serious question is whether the tendency to speculate in Western lands has gone to the length that would make it a factor in the financial situation. When the Comptroller of the Currency inaugurated more rigid rules for the inspection of national banks, many cases were discovered where Western banks had exceeded the bounds of prudence in their loans to men who were engaged in such speculations. Prompt corrective measures were applied but it is not known how far this same evil may have extended in the management of State banks. Those who are familiar with the actual business of selling lands of this character insist that it is not a matter of public moment. While the farmers, especially in the prairie States, have invested a very large amount of money in unimproved Western or Canadian lands, only a small part of the total is borrowed money. Practically all of it has come from surplus funds which the farmers have accumulated from the profits of their crops. There may be cases where the bankers would prefer to keep these funds in their own control, and much of the discussion on this subject may have had its origin in such instances.

It is a fact of great importance in the economic progress of the country that the farmers, especially in the Mississippi Valley, are accumulating a large surplus of idle money. They do not have savings banks in which to keep it, and in the older States east of the Missouri River commercial banks do not pay interest on deposits, except when they issue interest bearing certificates for a definite length of time. A surprisingly large number of farmers in the prosperous prairie States are carrying their surplus funds in these certificates. The amount of money that has gone into "foreign" land investments is probably a small factor in the aggregate cash reserve of the farmers. The temptation to put surplus funds into investments of this character is a very strong one. The best lands in Illinois and Iowa now command \$200 per acre and few of the holders are willing to sell. The farmer with surplus funds seldom understands the stock or bond market and prefers to take a chance on land because for years he has seen land steadily increase in value. Speculation in grain on the Board of Trade is no longer popular, and the swindling promoter of oil or mining stocks finds that his returns are better among school teachers, doctors and professional people in the cities than among farmers.

The high and steadily advancing prices which the farmers have obtained for their products in the past 10 years may have far reaching results in the financial world. The financial houses which market the bonds of railroads and municipalities have found it more and more difficult in recent years to place these bonds in New England and other investment territory which they formerly relied upon. The annual savings fund of the country appears inadequate to meet the demands upon it, and rates of interest have been advancing. New England is no longer making enormous profits in the construction of Western railroads, and no other unusual source of income has taken the place of railroad promotion. As the country becomes older and

competition increases, the returns grow less from investments in manufacturing and other ordinary enterprises. It is possible that the annual savings fund of New England is actually decreasing, or at least is not growing as rapidly as the demands upon it.

The farmers, however, especially in the prairie States, find themselves in the possession of a steadily increasing savings fund in the annual profits of their crops. A larger and larger share of the annual increment of wealth is passing into the control of an exceedingly conservative class of people, who know of no safe place to invest it except in land, which pays them a return of less than 4 per cent. It is possible that the railroads and the financial houses which market municipal bonds have overlooked this great change in the flow of money, which is carrying the surplus of the country to the Corn Belt rather than to New England. If the attention of the farmers could be attracted to high-class bonds it might make a great difference in their attitude toward corporate interests.

Correspondence

The Early Manufacture of Beams in Pittsburgh

To the Editor: In *The Iron Age* of September 29, 1910, there appeared an article entitled "The Manufacture of Rolled H-Beams," by G. E. Moore, being a reprint of a paper read at the meeting of the Iron and Steel Institute at Buxton, England, September, 1910. As there are several additions that should have appeared in the paragraph with the subtitle, "Pittsburgh Designs of 20 Years Ago," we desire to make proper mention of them now, as Pittsburgh had the distinction of rolling beams as early as 1883.

Joseph S. Seaman, now president of the Seaman, Sleeth Company, Forty-first street and Allegheny Valley Railway, Pittsburgh, early in 1883 erected in the plant located at the above point and operated under the name of James B. Young & Co., a 10-in. train, which on February 28, 1883, rolled the first 3-in. I-beam, a section of which Mr. Seaman has to-day. A special section designed to take the place of the H-beam was also rolled there. Andrew Carnegie and Henry Phipps, both at that time actively identified with the steel industry, witnessed these operations. On May 26, 1885, Mr. Seaman received patent No. 318,513 on his invention, and on April 2, 1889, patent No. 400,495. Between 1885 and 1889 there was installed in the plant of the Pennsylvania Steel Company, Steelton, Pa., a 22-in. train which rolled beams under Mr. Seaman's method. The rolling of beams as early as 1883, and there being a patent issued as early as 1885, therefore entitle Mr. Seaman to his claim for being the original inventor of rolls specially designed to manufacture structural shapes on a universal mill, as his patent precedes the German patent by several years.

PITTSBURGH.

The General Welding Company, 355-357 Fourteenth street, Hoboken, N. J., has been organized by André Beltzer, to manufacture new and improved welding machines and blow pipes of all kinds, oxy-acetylene, oxy-illuminating gas, oxy-benzine, &c. The company owns the sole rights in the United States for Mr. Beltzer's new and successful process of brazing aluminum and aluminum castings and will manufacture fluxes and brazing sticks for all welding and brazing purposes. Mr. Beltzer is a pioneer in oxy-acetylene welding in this country and was one of the proprietors of the Beltzer-Delcampe Welding Company, from which he withdrew last spring.

The National Machine Tool Builders

The Opening Session Disposes of the Questions of Noncancellation of Orders and Dealers' Commissions

The annual meeting of the National Machine Tool Builders' Association was opened Tuesday morning at Hotel Astor, New York, with an attendance without precedent in size. This large attendance was due partly to the interest in the announced programme, and partly to the greater membership, a growth of 50 per cent. having been achieved during the year. President Fred A. Geier was in the chair, and Secretary Charles E. Hildreth occupied his official desk. Most of the morning was given over to association business, including reports of various committees. The association adopted a resolution calling for the use of the following statement in connection with all matter relating to sales of machinery by manufacturers and dealers:

"Kindly note that all our proposals, quotations and acceptances of orders are made with the mutual understanding that orders are not subject to cancellation, provided shipment is made at time specified."

The vote was on the recommendation of the committee having this question in hand, presented and prepared by C. Wood Walter, Cincinnati, Ohio, which set forth the deep research which had been given the subject since the meeting in Rochester. The recommendation followed a joint meeting of this committee with a similar representation from the National Supply and Machinery Dealers' Association, and embodied the sentiment as voiced by the action of the Joint Committee. The purpose is to make this the beginning of a campaign of education.

Mr. Walter, for the same committee, made a report that finally disposes of the matter of dealers' commissions, which has been under consideration for several years. The report set forth that the problem is one for individual settlement between the manufacturer and his dealers and not for action by the association. The report was accepted. The vote indorses the view held by the committee.

Addresses on the subject, "Who Should Pay the Expenses of a Representative from the Factory When Sent Out at the Request of the Dealer to Help Close a Deal?" were made, in executive session, by F. L. Eberhardt, Gould & Eberhardt, Newark, N. J., and C. H. Norton, Norton Grinding Company, Worcester, Mass. The afternoon was devoted to meetings of the various committees representing the several types of machinery

The Turin Exposition.—The United States Government is to participate officially in the International Exposition to be held at Turin, Italy, in 1911. It has arranged for the construction of a building, and has also reserved for the use of American exhibitors 10,000 sq. m. of space in the various general galleries of the exposition. The exposition, as planned, will be the greatest ever held in Italy, and its promoters are expecting extensive support from American manufacturers. It will open April 15 and close October 31. The last day for filing applications for space and admission at Turin is December 31, 1910. The members of the American commission to the exposition are: Francis B. Loomis, Department of State, commissioner general, and Albert H. Michelson, American Consul at Turin, deputy commissioner.

Portland cement cupels for assaying ores have been tested at the School of Mines at the University of Utah, Salt Lake City, and the report states that Portland cement represents a cheap and convenient substitute for the bone ash commonly used. When neat cement with from 6 to 10 per cent. of moisture is used

a strong cupel is secured that does not check and will absorb its own weight of litharge. The silver loss due to absorption is about the same for cement as for 60 mesh bone ash the difference being insignificant compared with that due to a slight increase in temperature. Cupels made of a mixture of cement and bone ash are said to give a smaller silver loss than either one alone and the physical properties of the cupel are also superior. The process of cupellation is dependent upon the fact that the capillarity of the cupel is wet with respect to litharge and dry with respect to lead and the precious metals. Consequently the physical surface of the cupel has an important bearing on the absorption losses.

One Hundred Years' Production of Pig Iron in the United States

The production of pig iron in the United States in the past 100 years is shown in the appended table, taken from the *Bulletin* of the American Iron and Steel Association. Prior to 1854 the statistics given were compiled by various Government and other statistical agencies. For 1854 and all succeeding years the statistics have been gathered by the American Iron and Steel Association. The statistics for 1810, 1840, and 1850 are for census years. The figures for 1820 and 1830 are estimates made by early statisticians. Census statistics for these years are wanting.

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1810....	53,908	1863....	846,075	1887....	6,417,148
1820....	20,000	1864....	1,014,282	1888....	6,489,738
1828....	130,000	1865....	831,770	1889....	7,603,042
1829....	142,000	1866....	1,205,663	1890....	9,202,703
1830....	165,000	1867....	1,305,023	1891....	8,279,870
1831....	191,000	1868....	1,431,250	1892....	9,157,000
1832....	200,000	1869....	1,711,287	1893....	7,124,502
1840....	286,903	1870....	1,665,179	1894....	6,657,388
1842....	215,000	1871....	1,706,793	1895....	9,446,308
1846....	765,000	1872....	2,548,713	1896....	8,623,127
1847....	800,000	1873....	2,560,963	1897....	9,652,680
1848....	800,000	1874....	2,401,262	1898....	11,773,934
1849....	650,000	1875....	2,023,733	1899....	13,620,703
1850....	563,755	1876....	1,868,961	1900....	13,789,242
1852....	500,000	1877....	2,066,594	1901....	15,878,354
1854....	657,337	1878....	2,301,215	1902....	17,821,307
1855....	700,159	1879....	2,741,853	1903....	18,009,252
1856....	788,515	1880....	3,835,191	1904....	16,497,033
1857....	712,640	1881....	4,144,254	1905....	22,992,380
1858....	629,548	1882....	4,623,323	1906....	25,307,191
1859....	750,500	1883....	4,595,510	1907....	25,781,361
1860....	821,223	1884....	4,097,868	1908....	15,936,018
1861....	653,165	1885....	4,044,526	1909....	25,795,471
1862....	703,270	1886....	5,683,329		

The White Star liner *Olympic*, the largest vessel in the world, was successfully launched from Harland & Wolff's shipyard at Belfast, Ireland, October 20. Her tonnage is 45,000. She has been building for 22 months, and it will be some eight months more before she is ready for her trial trip. Her principal dimensions are as follows: Length over all 882½ ft.; breadth over all 92½ ft.; height from bottom of keel to boat deck 97 ft. The number of steel decks is 11 and the number of water-tight bulkheads 15. Her sister ship, the *Titanic*, is well advanced and is to be launched soon. The vessels will be driven by a combination of reciprocating engines and low-pressure turbines. The speed is to be 22 knots an hour.

The T. H. Symington Company, Baltimore, Md., announces that its Chicago office will be moved November 1 from the Railway Exchange to Suite 623-625 People's Gas Building. In addition to the Symington journal boxes this company also handles the Farlow draft gear, center and side bearings for cars and an extensive line of miscellaneous malleable castings.

The Penn Bridge Company, Beaver Falls, Pa., has appointed Norton & Potter its Eastern agents, with offices in the Hudson Terminal Building, New York.

The American Iron and Steel Institute Tour

Features of the Inspection of Works in the Buffalo, Chicago and Pittsburgh Districts on a Memorable Excursion

The special train bearing members of the American Iron and Steel Institute and their foreign guests reached Jersey City at 9.40 p.m., Saturday, October 22, and the excursion feature of the most memorable of international meetings of iron and steel manufacturers was at an end. A distance of nearly 2500 miles had been covered, and in five days three important iron and steel districts had been visited while a sixth day had been devoted to the National Capital. Three evening functions had been enjoyed and a visit paid to one of the country's great natural spectacles.

Tours of engineering societies and of manufacturers' associations are not rare, and there have been international gatherings on both sides of the water. But it is probable that no such excursion was ever made whose members had the degree of comfort in railroad travel afforded those who journeyed on the institute train last week, or had the opportunity to see important industrial works under such favorable auspices.

Rare weather conditions prevailed throughout the week. Not a single arrangement needed to be changed. After five days of clear skies and summer air, with heat at times rather oppressive, the only rain of the trip came Friday night and early Saturday morning; but after the arrival at Washington the clouds lifted and the last day of the six proved almost perfect. Concerning the management of the trip in every particular the foreign guests were unstinted in expressions of praise, and those of the American members of the party who made the tour without having any of the responsibilities borne by the general and local committees were equally appreciative. The exactness with which the schedule was lived up to with so large a number of appointments through the week and so many possibilities of the unexpected was a marvel of good management.

AT BUFFALO AND NIAGARA

The ground covered at Buffalo and Niagara Falls was referred to briefly in *The Iron Age* of October 20. The inspection of the Lackawanna Steel Company's works was under the conduct of President Clarke, Vice-President McCullough, General Superintendent George F. Downs and Arthur J. Singer, assistant to the president. The coke oven plant, rail mill and sheet bar mill, to which special attention was paid, have been described in these columns. The frame work of the new merchant mill was seen to be well on toward completion. This mill, which is being designed and installed by the Morgan Construction Company, Worcester, Mass., will roll $\frac{1}{4}$ to $\frac{3}{4}$ in. rounds, squares up to $\frac{3}{4}$ in., and $1\frac{1}{2}$ -in. flats $\frac{1}{4}$ to $\frac{1}{2}$ in. There will be six roughing stands and a Belgian mill of four stands. To increase the finishing capacity two additional stands will be provided, duplicating the last two stands of the Belgian mill, the expectation being that an output of 300 tons a day will be reached. The continuous roughing mill and the Belgian mill will each have its own engine. Thirty-foot billets will be the raw material of the new mill and a continuous heating furnace of the Morgan type is being built.

An automobile trip through Buffalo's business and residence districts followed the steel works inspection, and after passing through Delaware Park the automobiles were left at Bridge street. A short walk brought in sight the new Government ship lock in Black Rock Harbor, Niagara River. The harbor, which might more

properly be called a canal, is $3\frac{1}{8}$ miles long by 100 to 400 ft. wide, lying along the Niagara River front of Buffalo, generally parallel to the Niagara River and separated from it by Bird Island pier and Squaw Island. The Erie Canal, which lies between Black Rock Harbor and the main shore, is being changed to a ship canal, and the lock which is now being built is one of the largest ship canal locks in the world. Its construction called for the largest cofferdam ever built, and this was made possible by the development of steel sheet piling. The cofferdam is 947 ft. long, 245 ft. wide, outside dimensions, at one end and 260 ft. at the other. The piling is of 40 to 50 ft. lengths. It was furnished by the Lackawanna Steel Company, the total amount being 6352 net tons. The wall of the cofferdam is made of two lines of sheet piling 30 ft. apart, with division walls at 30-ft. intervals, forming 30-ft. pockets. These pockets are filled with clay to form the solid wall of the cofferdam. The completion in 1912 of the work the Government is now doing, the appropriation for which was \$5,000,000, will give in place of the present Erie Canal a channel averaging 200 ft. in width and not less than 23 ft. deep, navigable for lake vessels of the largest size, from the head of Niagara River to and including the north end of Tonawanda Harbor. The State's work on the \$101,000,000 barge canal ends at North Tonawanda. The Government work means a very important addition to the water front of Buffalo and its suburbs on the north, and the building of docks on which large vessels can discharge their cargoes will make available manufacturing sites for which of late the demand has been greater than the supply.

Boarding their train near Black Rock Harbor, the members of the Institute and their guests proceeded to Niagara Falls, luncheon being served en route. Trolley cars conveyed them to the two power houses on the American side of the Niagara Falls Power Company, where 21 generators are in operation, each capable of delivering 5000 electrical horsepower. Each generator is driven by an independent water turbine receiving its supply of water through an independent steel penstock. Coming to the Canadian side, the visitors were taken first to the intake works above the Falls, and later to the generating station below the Falls, of the Ontario Power Company. The water is carried in two 18-ft. conduits of steel and concrete for a distance of a mile to the generating station. Seven generators are now in operation, and three others are under contract to the Canadian General Electric Company. It is stated that of the 800,000-hp. of Niagara power permitted to be taken under the present treaty between the United States and Canada, the different plants have now available, or will have when machinery now being installed is running, a total of 479,000 hp.

From the generating and distributing stations of the Ontario Power Company the tourists were taken in trolley cars for a trip around the Niagara River Gorge and Whirlpool Rapids, on the Canadian side, crossing the bridge at Lewiston and returning by the Gorge on the American side. It was the remark of many that never had the Falls been seen to better advantage, the effect being enhanced by a clear October sky, bright sun and the splendid coloring of autumn foliage.

At 5 o'clock the train was under way, and the journey to Gary had begun over the Michigan Central Railroad by way of Detroit.

IN THE CHICAGO DISTRICT

In the approach to Gary, Ind., early Tuesday morning, the visitors had the opportunity to see the shifting character of the lake shore sands, which with their scrub oak and scrub pine made up the landscape of the Gary district when the founders of the stupendous steel enterprise there first went upon the ground. A mountain of coke has been accumulated in the Gary yard as a hedge against car shortage and other contingencies growing out of the long distance separating the plant from its sources of fuel supply. As at the Lackawanna plant at Buffalo, the tour of the Gary plant was made by the use of a train of gondola cars which the party left at intervals as some part of the works was reached which called for close inspection. The extensive by-product coke oven plant now going up at Gary was seen first. The erection of the ovens is carried on under cover of a roof supported by steel framework, this as protection against inclement weather. The plant will consist of 560 ovens, located immediately east of the blast furnaces and steel works, and the output of by-product coke is expected to reach 160,000 tons a month. It is of interest to note that the advisability of depending entirely upon by-product coke at this plant has been established by recent tests. One of the Gary furnaces was operated throughout the month of August on a mixture of which 96 per cent. was Mesaba ore. The fuel was by-product coke from the Joliet ovens, made from coal of which 80 per cent. was Pocahontas and 20 per cent. was sixth pool coal from the Pittsburgh district. The average output of pig iron was about 500 tons a day, while the coke consumption per ton of pig iron was held below 2100 lb.

At the ore docks the operation of the Hulett unloaders was seen. The buckets are rated at 10 tons capacity, but as a rule take 12 tons at a "grab." While spectacular records have not been strained for, the Gary unloaders have taken out 12,000 tons from a vessel in eight hours. The famous gas blowing engine house and gas engine electric power house at Gary were visited in turn. Their equipment has already been thoroughly described. One of the open hearth units of 14 furnaces was inspected by running the visitors' train from end to end of the building over the charging floor. The rolling operations which excited the admiration of the visitors, were those of the blooming mill, rail mill and billet mill. The equipment of these is without precedent in works of this character, both as to massiveness and uniqueness of construction, notably the four tandem blooming stands and the prodigious size and power of the combined hydraulic and pneumatic device controlling the lifting table at the 40-in. three-high blooming mill, in which the piece is given five passes. In the continuous billet mill a feature of interest was the twist in the guides, by which after the first, third and fifth passes the billet is given a quarter turn. There are six trains of 24-in. rolls in the billet mill, making it the largest pure continuous mill in existence.

South Chicago, Chicago and West Pullman Industries

Following the inspection of the Gary works automobiles were taken for a ride through the city. This disclosed progress in town building which was beyond the expectations even of the American members of the party. Some of the buildings are excellent examples of architecture, both brick and concrete structures being represented in the public and semi-public buildings. The institute train left Gary at 12.30 for the South Chicago Works of the Illinois Steel Company and luncheon was served en route. The inspection of the South Works occupied about two hours. The feature of greatest interest was the 15-ton Heroult electric furnace which was seen in operation, though the visit was not timed for a cast. The tour of the South Works ended near the structural mill at the north end of the plant where a special train on the Illinois Central was

taken for the Twelfth street station of that road in Chicago. Tuesday night was spent at the Blackstone Hotel, which was headquarters during the stay in Chicago.

Wednesday's tour was made in automobiles, leaving the Hotel at 9.30 a.m. A half hour's ride brought the visitors to the McCormick plant of the International Harvester Company, at Blue Island and Western avenues. The twine mill in which about 900 operatives are employed and which produces about 22,000 carloads of binder twine a year, was visited first and then in succession the bolt shop, knife shop and binder room. In the last named the manufacture of the binding parts of grain binders is carried on, as well as the testing of knotters. The malleable foundry, which last year produced 29,572 tons of castings of an average weight of 7 ounces per piece, was also visited. An inspection of the Armour plant at the Union Stock Yards followed the visit to the McCormick Works, and later the South Shore Country Club was visited and luncheon was served. In the afternoon a special train was taken for the Pullman Company's car works at West Pullman, the tour of which occupied about an hour.

The Chicago Dinner

The dinner on Tuesday evening at the Blackstone Hotel, the latest and most notable addition to the list of Chicago's hotels, was one of lavish appointments, and the after dinner speaking showed perhaps more freedom than that of the Waldorf-Astoria banquet at New York. The acquaintance of several days had created a sense of *camaraderie* which put all at their ease. One of the attractions at the tables was a decorators' model of a blast furnace with double skip hoist, and the realism was enhanced by the tapping of the furnace, there being a miniature car alongside for receiving the molten metal and a locomotive at hand to draw it to the steel works. Among the banqueters were a number of Chicago manufacturers and representatives of railroad companies.

President E. J. Buffington of the Illinois Steel Company, the toastmaster of the evening, made apt introductory remarks and presented as the first speaker Governor Charles E. Deneen of Illinois. The latter was followed by E. J. Brundage, Chicago corporation counsel, who represented the Mayor in a word of greeting.

Chairman E. H. Gary of the United States Steel Corporation spoke of the progress made in the United States in the past decade in improving the methods and morals of men, and to the important economic and ethical questions which have arisen out of present day conditions. "It is not important," he said, "to consider the merits or methods of individuals who have been prominent in the crusade for the betterment of conditions. It is time for all to take a decided stand on the great questions which involve the life and health, safety and happiness of the whole people." In conclusion the speaker said:

I still think that there is some danger of going beyond the bounds of necessity and propriety and reason in our efforts to correct abuses and to establish conditions which we deem proper. Many of us realize that it is time to thoroughly build up and steadfastly maintain a constructive policy in this country. We should remember that the large majority of the people believe in the right and intend to do the right; that they are not altogether selfish nor unmindful of the welfare of others; that they love their country and will endeavor to serve its best interests; that they are honest, earnest and patriotic.

Sir Charles Allen of the Ebbw Vale Steel Company, England, a nephew of Sir Henry Bessemer, made a happy response, saying for one thing that he had formed a very good opinion of America, for he could not help thinking that his brethren here go on the principle that if they do not enjoy themselves in this life they will suffer for it in the next. Referring to Sir Henry Bessemer, he said the latter had told him

in a conversation shortly before his death that had it been possible for him to have been placed in the center of London at 20 years of age, without a farthing, he felt convinced he could have done much more good for the world than he had done and would have made a much larger fortune. Of the early operations of the original Bessemer company, the speaker said that after a test of rails on the London & Northwestern Railroad an order for 200 tons was given by the road; this was considered so magnificent a stroke of fortune that the works were closed down for a week's holiday. Sir Charles Allen paid a warm tribute to President Farrell of the United States Steel Products Company in the following:

He has the regard of every steel maker in England and on the Continent, and I can assure you that he can justly claim to be the pioneer in introducing a system whereby the "survival of the fittest" will disappear and in the future "live and let live" will prevail. One cannot read his paper, presented at the New York meeting, without grasping the importance of every sentence it contains on the principle of co-operation. And so far as the members of the iron and steel trade in England and America are concerned, I am perfectly convinced that this principle will work smoothly for years to come.

E. Schaltenbrand, Duesseldorf, Germany, said among other things: "We in Germany are learning from our American friends to derive profits out of the forming of big units; we learn from them to reduce the cost of production by making large quantities, by working on a large scale. On the other hand, we pride ourselves that our American friends can learn from us economical ways and the reduction of the cost of production by applying scientific methods."

The other speakers were Judge C. C. Kohlsaat, Chicago; R. de Labriolle, Paris; George W. Perkins, New York; Baron von Bodenhausen, Essen, Germany; L. Spaak, Ougree, Belgium; and Sir John Randles, Workington, England. Just before the party broke up, the toastmaster introduced Theodore W. Robinson, vice-president of the Illinois Steel Co., who explained the allegory of the shield he had devised for the American Iron and Steel Institute.

AT PITTSBURGH

Leaving Chicago at 6.30 p.m. Wednesday, over the Pennsylvania Lines, the special train arrived at the Pennsylvania station in Pittsburgh about 9 o'clock Thursday morning. By street cars the party was taken through Liberty, Wood and Water streets to the boat landing on the Monongahela River, where the steamer I. C. Woodward was in waiting. The characteristic Pittsburgh fog hung over the city early in the morning, but soon lifted and the day proved to be as favorable as its predecessors. A special landing had been built for the guests at the South Side works of the Jones & Laughlin Steel Company, this being the first plant visited. The nine Talbot open hearth furnaces, five rated at 180 tons and four at 225 tons a day, were all in operation, and the visitors stopped long enough to see metal poured from three furnaces. The chain works, the Keystone structural works and other departments were visited in turn, the trip being made by train, the visitors being provided with seats on flat cars. The five Eliza blast furnaces and the Soho furnace were all in operation. At the Eliza plant attention was called to stack No. 4, which was blown in a few weeks ago after complete rebuilding. The tearing down of the furnace and its complete rebuilding were accomplished in the remarkably short period of 97 days. The No. 4 furnace and one other of the Eliza group are now equipped with the Kennedy closed top, the purpose of their reconstruction being to obviate the emissions of flue dust which for several years have been a cause of court action against the Jones & Laughlin Steel Company by residents in the neighborhood. The reconstructed shells are of 1-in. plates, as against ½-in. and ¾-in. plates used for the original furnaces, which were equipped with explosion

doors and other top vents through which gases and ore dust issued when slips occurred. The remaining three furnaces of the Eliza group will be rebuilt and equipped in the same manner as the No. 4 stack.

The Jones & Laughlin inspection ended at Hazelwood, where the party again embarked on the steamer for a trip up the Monongahela. Various plants were pointed out on the way, including the Carrie furnaces and the Edgar Thomson, Homestead and Duquesne works of the Carnegie Steel Company, the Braddock and Rankin plants of the American Steel & Wire Company, the United States and Wood works of the American Sheet & Tin Plate Company, the National and Boston departments of the National Tube Company, and the plants of the McClintic-Marshall Construction Company, Monongahela Iron & Steel Company, Harbison-Walker Refractories Company and Mesta Machine Company. The steamer passed through one lock, No. 2, formerly known as the Port Perry lock. Early in the afternoon, after lunch had been served on board, the steamer turned about and at 2.30 the Homestead Steel Works were reached, this being the end of the river trip.

The armor plate department at Homestead was visited first, operations there being timed so that the forging of an 80-ton ingot could be seen. The ingot, 27 in. thick, was taken to the 12,000-ton Bethlehem press and given the first of the series of forgings required to bring it down to a thickness of 11 in. The finished plate will form part of the side armor of one of the new battleships for the Argentine Republic. It is of nickel chrome steel, containing 3½ per cent. nickel, 1 per cent. chrome, with carbon running from 0.26 to 0.35 per cent. Passing from the forging department, the party visited the tempering shop and witnessed the quenching of material 2 in. in thickness which will be used as protective deck plates.

A number of the visitors who had expressed a desire to see the Mesta Machine Company's works were taken in automobiles to West Homestead, where an hour was spent in an inspection of the steel and gray iron foundries and the extensive machine shop. The latter is to be considerably enlarged and the present steel foundry alongside of it will be abandoned and a large new steel foundry erected, in continuation of the present gray iron foundry building, which is 300 ft. long. The ultimate length of the foundry department will be 900 ft. The machine shop is now engaged on heavy rolling mill engine work, condensers and heavy gears. It is equipped with machinery of the heaviest type, notably a large gear cutting machine and a horizontal boring mill, the latter being driven by a 150-hp. motor. Some account was given the visitors of special features of the 600-hp. Mesta heavy duty gas engine the company has recently built, the designing of which represents more than two years of work by its engineering department. The engine is shown in operation direct connected to a 400-kw. generator, which supplies all the electric power required by the plant. Using natural gas at 12 cents per 1000 cu. ft., the new engine has thus far resulted in a saving of about \$800 a month from the cost of operating the steam engine which it has displaced.

Social Features

The members of the party were taken from Homestead in automobiles to the Hotel Schenley, and that hotel was headquarters throughout the stay in Pittsburgh. An informal dinner was given Thursday evening at 7 o'clock and there was a brief speaking programme, with somewhat less formality than attended the addresses at the New York and Chicago dinners. Willis L. King, chairman of the Pittsburgh committee, presided, and was given an enthusiastic reception. He introduced the Pittsburgh city solicitor, Charles J. O'Brien, who greeted the guests as the representative of Mayor William A. Magee. Col. Samuel Hardin

Church, secretary of the Board of Trustees of the Carnegie Institute, gave an invitation to all the guests to visit the Institute on the following day, and Dr. A. A. Hammerslag, director of the Carnegie Technical School, gave an invitation to visit that institution. On behalf of the foreign visitors responses were made by William B. Peat and G. Mure Ritchie. President Gary was introduced as the last speaker of the evening and in impromptu remarks paid a tribute to Pittsburgh industry and Pittsburgh industrial leaders. It was not surprising that the Pittsburgh papers of the next morning gave prominence to what Judge Gary said of the pre-eminence of Pittsburgh in iron and steel, particularly these sentences: "I sometimes hear loose statements of the possibility of decrease in the growth of the iron and steel industry in Pittsburgh. I have heard other cities spoken of in respect to steel making to the detriment of Pittsburgh. In my opinion Pittsburgh is, and will continue to be, the great steel and iron center of the world."

The Pittsburgh dinner, like that at Chicago, was made more enjoyable by the addition to the party of a number of representatives of local iron and steel industries. In this way the foreign visitors were brought directly in contact with those best able to inform them concerning local development.

The Friday morning programme included visits to the Carnegie Technical School, art department, museum, library and music hall, the entire forenoon being devoted to these features. In the afternoon conveyances were taken for a trip to the Westinghouse Electric & Mfg. Company's works at East Pittsburgh. The final social function of the tour came on Friday evening, consisting of an informal dinner in the banquet hall of the Hotel Schenley, followed by a vaudeville entertainment. The mutual regard engendered by the companionship of the preceding days found free and eloquent expression at the conclusion of the entertainment. On behalf of the guests from other countries, G. Scoby-Smith paid a high tribute of appreciation to E. A. S. Clarke and J. A. Farrell of the General Committee of Arrangements, whose talent for organizing and executing plans for the comfort and entertainment of the party had been so signally in evidence from the beginning. E. Schaltenbrand followed Mr. Scoby-Smith, and gracefully complimented Mr. Clarke and Mr. Farrell, to whom he referred as the "managing angels" of the excursion, who had demonstrated supernatural powers in being everywhere at one and the same time. Messrs. Clarke and Farrell responded fittingly to calls for their appearance, and the former as chairman referred to the work done by John A. Topping, the third member of the General Committee, who was prevented from making the trip by the occurrence of the annual meeting of his company. Mr. Clarke also spoke of the efficient service of Howard H. Cook, assistant secretary of the Institute.

There was general and genuine regret at the impending severance of the relations which the New York meeting and the days of travel following it had cemented. Several members of the party left it at Pittsburgh, but there were about 65 who went on to Washington Friday night to participate in the one day's programme out of the six that had in it no steel works sights or sounds.

AT WASHINGTON

The new union depot at Washington, just northeast of the Capitol building, and itself one of the famous structures of the national capital, was reached shortly after 10 o'clock Saturday morning. It is 760 ft. long and 343 ft. wide, the passenger concourse, 760 ft. in length, being the largest room in the world under one roof. Proceeding to the White House in automobiles the visitors were received in the East room by President Taft. Judge Gary addressed the President briefly and after the latter's response the members of the

party were presented to him individually. The President referred to the basic character of the iron and steel industry, and to its importance as indicating by its condition the presence or absence of prosperity in business generally. He hoped that such meetings of representatives of the industry from different countries would result in benefit, particularly in the reduction of the cost of production. Washington newspapers in their account of the call intimated that it had some significance in connection with the Government investigation of consolidations in the steel industry—about as stupidly misleading a statement as could have been framed.

A Visit to the Bureau of Standards

The sightseeing trip following the visit to the White House included the portions of the city commonly considered most attractive, and in addition the buildings far out to the northwest, reached by way of Connecticut avenue extension—those occupied by the Bureau of Standards. The three buildings are of substantial construction, and are splendidly equipped for the important work carried on by Director Stratton and his staff of 15 engineers. The visitors were taken in groups to the various laboratories. They were impressed with the extent and thoroughness of the work carried on and the amount of equipment employed at this early stage of the work of the bureau. The standards of length and mass shown in the main building probably received more general attention from the visitors than any other feature. The recent reproductions of the standard yard made in X section from an alloy of iridium and platinum were shown alongside of original standards brought to this country from abroad, and the methods of preserving and copying official standards were explained. The work done in thermometry and pyrometry and the apparatus used in determining standards for high temperatures, were of special interest as bearing on the heat treatment of iron and steel. The investigations of engineering and structural materials heretofore carried on at Watertown Arsenal were transferred to Washington early this year, and the apparatus and photographs and drawings of specimens of steel from ingots and rails were shown. In what is known as the West Laboratory a new line of investigation is the electrolytic decomposition of reinforced concrete. For the testing of engineering materials a large room is set aside for the Emery testing machine now under construction, which will have a capacity of 1,150,000 lb. tension and 2,300,000 lb. compression.

In the main building an interesting explanation was given of the methods of preparing standard samples of steel, iron and other materials, these being used as checks by chemists connected with the various manufacturing companies. The standard samples of iron ore, pig iron and steel thus far prepared were exhibited. Some of the visitors found the electrical laboratories of particular interest, as well as the equipment of the bolometric laboratory. Other departments visited represented length measurements by means of light waves, spectroscopic work and polariscopic and photometric investigations.

On the return to the union depot the party was taken through Rock Creek Park, thence through a portion of the residence section, and finally to the Washington Monument, Smithsonian Institution and other points of interest.

Leaving Washington at 4.10 p.m. the special train reached Jersey City at 9.40. The representatives of the foreign countries spent Sunday in New York and a number of them sailed on Tuesday, October 25. A party of 10, conducted by Frank Baackes, vice-president and general sales manager of the American Steel & Wire Company, made a trip on Monday to the Worcester, Mass., works of that company. Several of the guests will remain in this country a week or two.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Oct. 26, Oct. 19, Sept. 28, Oct. 27,
1910. 1910. 1910. 1909.

PIG IRON, Per Gross Ton:

Foundry No. 2, standard, Philadelphia	\$15.75	\$15.75	\$16.00	\$19.00
Foundry No. 2, Southern, Cincinnati	14.25	14.25	14.25	17.75
Foundry No. 2, local, Chicago	16.00	18.00	16.25	19.00
Basic, delivered, eastern Pa.	15.00	15.00	15.00	9.00
Basic, Valley furnace	13.00	13.00	13.50	17.00
Bessemer, Pittsburgh	15.90	15.90	15.90	19.90
Gray forge, Pittsburgh	14.15	14.15	14.15	17.15
Lake Superior charcoal, Chicago	18.00	18.00	18.25	19.50

BILLETS, &c., Per Gross Ton:

Bessemer billets, Pittsburgh	23.50	23.50	24.00	27.00
Forging billets, Pittsburgh	29.00	29.00	29.00	30.00
Open hearth billets, Philadelphia	26.00	26.00	26.00	28.60
Wire rods, Pittsburgh	28.50	28.50	28.00	32.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:

Steel rails, melting, Chicago	13.50	13.50	13.50	17.25
Steel rails, melting, Philadelphia	13.75	13.75	14.00	18.00
Iron rails, Chicago	16.00	16.00	16.00	20.50
Iron rails, Philadelphia	18.00	18.00	18.00	21.00
Car wheels, Chicago	14.00	14.00	14.00	18.25
Car wheels, Philadelphia	13.75	13.75	13.75	17.50
Heavy steel scrap, Pittsburgh	14.25	14.25	14.25	18.00
Heavy steel scrap, Chicago	12.25	12.25	12.25	16.00
Heavy steel scrap, Philadelphia	13.75	13.75	14.00	18.00

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	1.40	1.40	1.40	1.60
Common iron bars, Chicago	1.35	1.35	1.37½	1.55
Common iron bars, Pittsburgh	1.45	1.45	1.45	1.65
Steel bars, tidewater, New York	1.56	1.56	1.56	1.66
Steel bars, Pittsburgh	1.40	1.40	1.40	1.50
Tank plates, tidewater, New York	1.56	1.56	1.56	1.66
Tank plates, Pittsburgh	1.40	1.40	1.40	1.50
Beams, tidewater, New York	1.56	1.56	1.56	1.66
Beams, Pittsburgh	1.40	1.40	1.40	1.50
Angles, tidewater, New York	1.56	1.56	1.56	1.66
Angles, Pittsburgh	1.40	1.40	1.40	1.50
Skelp, grooved steel, Pittsburgh	1.40	1.30	1.40	1.45
Skelp, sheared steel, Pittsburgh	1.40	1.40	1.50	1.55

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.20	2.20	2.15	2.30
Wire nails, Pittsburgh*	1.70	1.70	1.70	1.80
Cut nails, Pittsburgh	1.65	1.65	1.65	1.80
Barb wire, galv., Pittsburgh*	2.00	2.00	2.00	2.10

METALS, Per Pound:

	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	12.87½	12.87½	12.75	13.25
Electrolytic copper, New York	12.80	12.80	12.50	12.87½
Spelter, New York	5.60	5.60	5.60	6.30
Spelter, St. Louis	5.45	5.45	5.45	6.10
Lead, New York	4.40	4.40	4.40	4.40
Lead, St. Louis	4.27½	4.27½	4.27½	4.25
Tin, New York	36.15	37.62½	35.12½	30.50
Antimony, Hallett, New York	7.75	7.75	7.87½	8.25
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	\$3.84	\$3.84	\$3.84	\$3.74

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Material.—I-beams and channels, 3 to 15 in., inclusive, 1.40c. to 1.45c. net; I-beams over 15 in., 1.50c. to 1.55c., net; H-beams over 8 in., 1.55c. to 1.60c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.40c. to 1.45c. net; angles over 6 in., 1.50c. to 1.55c. net; angles, 3 in. on one or both legs, less than ¼ in. thick, 1.45c., plus full extras as per steel bar card, effective September 1, 1909; tees, 3 in. and up, 1.40c. to 1.45c. net; tees, 3 in. and up, 1.40c. to 1.45c. net; angles, channels and tees, under 3 in., 1.45c., base, plus full extras as per steel bar card of September 1,

1909; deck beams and bulb angles, 1.70c. to 1.75c. net; hand rail tees, 2.50c.; checkered and corrugated plates, 2.50c. net.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.40c. to 1.45c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	\$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Roller and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Makers' prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, 1.60c.; Nos. 9 and 10, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 1.85c. One pass, cold rolled, box annealed sheets: Nos. 15 and 16, 1.95c.; Nos. 17 and 21, 2c.; Nos. 22 and 24, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.35c. Three pass, cold rolled sheets, box annealed, are as follows: Nos. 15 and 16, 2.05c.; Nos. 17 to 21, 2.10c.; Nos. 22 to 24, 2.15c.; Nos. 25 and 26, 2.20c.; No. 27, 2.25c.; No. 28, 2.30c. Galvanized sheets, Nos. 13 and 14, 2.45c.; Nos. 15 and 16, 2.50c.; Nos. 17 to 21, 2.65c.; Nos. 22 to 24, 2.85c.; Nos. 25 and 26, 2.95c. to 3c.; No. 27, 3.05c. to 3.10c.; No. 28, 3.20c. to 3.25c.; No. 29, 3.40c. to 3.45c.; No. 30, 3.60c. to 3.65c. Painted roofing sheets, No. 28, \$1.55 to \$1.60 per square. Galvanized sheets, No. 28, \$2.80 to \$2.85 per square, for 2½-in. corrugations. All above prices are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount 10 days from date of invoice.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 1:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
1½, 1¼, ¾ in.	72	58	68	54
1½ in.	75	63	71	59
1½ to 1½ in.	79	69	75	65
2 to 3 in.	80	70	76	66
Lap Weld.				
2 in.	76	66	72	62
2½ to 4 in.	78	68	74	64
4½ to 6 in.	77	67	73	63
7 to 12 in.	75	59	71	55
13 to 15 in.	51½			
Butt Weld, extra strong, plain ends, card weights.				
1½, 1¼, ¾ in.	69	59	65	55
1½ in.	74	68	70	64
1½ to 1½ in.	78	72	74	68
2 to 3 in.	79	73	75	69
Lap Weld, extra strong, plain ends, card weight.				
2 in.	75	69	71	65
2½ to 4 in.	77	71	73	67
4½ to 6 in.	76	70	72	66
7 to 8 in.	69	59	65	55
9 to 12 in.	64	54	60	50
Butt Weld, double extra strong, plain ends, card weight.				
1½ in.	64	58	60	54
1½ to 1½ in.	67	61	63	57
2 to 3 in.	69	63	65	59
Lap Weld, double extra strong, plain ends, card weight.				
2 in.	65	59	61	55
2½ to 4 in.	67	61	63	57
4½ to 6 in.	66	60	62	56
7 to 8 in.	59	49	55	45

THE IRON AND METAL MARKETS

Plugged and Reamed.

1 to 1½, 2 to 3 in. Butt Weld { Will be sold at two (2) points lower basing (higher price) than merchant or card weight pipe, Butt or Lap Weld as specified.
2, 2½ to 4 in. Lap Weld {

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1½ in.	49	43
1½ to 2½ in.	61	43
2½ in.	63	48
2½ to 5 in.	69	55
5 to 13 in.	61	43
2½ in. and smaller, over 18 ft., 10 per cent. net extra.		
2½ in. and larger, over 22 ft., 10 per cent. net extra.		

Less than carloads to destinations east of the Mississippi River will be sold at delivered discounts for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, \$28.50.

Steel Rivets.—Structural rivets, ¾-in. and larger, 1.90c., base; cone head boiler rivets, ¾-in. and larger, 2c., base; ¾-in. and 11-16-in. take an advance of 15c., and ½-in. and 9-16-in. take an advance of 50c.; in lengths shorter than 1-in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

Pittsburgh

PARK BUILDING, October 26, 1910.—(By Telegraph.)

Pig Iron.—The low prices ruling are becoming attractive to consumers and some business has been placed. A sheet and tin plate maker in the Wheeling district has bought about 5000 tons of basic iron for first quarter delivery from a nearby furnace which has a low rate of freight, at a price netting the seller about \$13.50 at furnace; if the iron came from a Valley furnace it would figure out only \$12.75 at furnace. A Canton, Ohio, consumer has bought 3000 tons of basic, also for first quarter delivery, which will probably come from a furnace having a lower rate of freight than the Valley furnaces. A local steel casting interest is in the market for 1500 tons of standard Bessemer iron, 250 tons a month, for first half, which is the first inquiry of any note for Bessemer in this market for some time. A local plumbing supply interest has bought 2000 tons of Northern No. 2 foundry iron at a price slightly under \$14 at Valley furnace. Heavy stocks of iron are piled at the Valley furnaces. Bessemer iron remains nominally at \$15; basic is \$13; No. 2 foundry about \$14, and gray forge \$13.25, all at Valley furnace, with a freight rate of 90c. a ton for delivery in the Pittsburgh district.

Steel.—No new business of moment is being offered in billets, or sheet and tin bars. Consumers of sheet and tin bars are specifying liberally on their contracts, but are believed to be piling them for use in first quarter, as prices for that delivery have not yet been settled. Bessemer billets are weak. Open hearth sheet bars are being offered by one or two outside open hearth plants at slightly less than \$25 delivered, Pittsburgh. We quote Bessemer 4 x 4 in. billets at \$23.50 to \$24; open hearth 4 x 4 in. billets, \$24 to \$24.50; Bessemer and open hearth sheet and tin plate bars, \$25; forging billets, \$29 to \$29.50, all f.o.b. cars, Pittsburgh, Youngstown or Wheeling district.

(By Mail.)

The eagerness of some of the blast furnace owners in the Central West to sell pig iron, even at present low prices, is shown in the recent purchases by the Pittsburgh Malleable Iron Company of this city. It has placed two lots of 3000 tons each of malleable Bessemer iron, for delivery through all of 1911, at \$14, at Valley furnace, or \$14.90, Pittsburgh. It also secured 3000 tons of charcoal iron for the same delivery and at a very low price. It is claimed, and with good reason, that present selling prices of malleable Bessemer, basic and foundry iron are below cost to the merchant furnaces that have to buy ore and coke in the open market, but in spite of this there are quite a number of furnaces that seem willing to sell for long time delivery at today's market. The Westinghouse Air Brake Company has inquiries out for a small tonnage of gray forge and malleable iron, but it is probable that it will buy 15,000 to 20,000 tons, deliveries to run through first quarter of 1911. There is practically no inquiry for Bessemer iron, the market being nominally \$15, at Valley furnace, with a certainty that this price would be shaded if any large business was offering. The steel market continues very weak, with the leading makers inclined to go after business more aggressively and to name lower prices. A good deal of steel, mostly open hearth, is in the hands of middlemen, who are offering it at lower prices than the large steel interests have heretofore

been inclined to meet. One open hearth plant is offering open hearth sheet bars on the basis of \$24, at mill, or \$24.70, Pittsburgh. Leading interests, such as Carnegie Steel Company, Jones & Laughlin and Republic, report that specifications against contracts in the last week have been heavier than in any one week for some time, and this is the most encouraging feature of the situation. The report that the Interstate Commerce Commission has practically decided to allow the Western railroads to advance freights, effective February 1, cannot be confirmed here, but is believed to be true. There is not much hope, however, of material improvement in the railroad demand until after the turn of the year, and it may not come until second quarter.

Ferromanganese.—Some new inquiry is in the market and a sale of 600 tons, equal monthly deliveries over first half of 1911, is reported at a price between \$38.50 and \$39, Baltimore. Consumers are pretty well covered for this year, and most of the new inquiry is for first quarter and first half. The freight rate from Baltimore is \$1.95, for delivery in Pittsburgh district.

Ferrosilicon.—Prices for forward delivery are lower than for prompt shipment, this material being somewhat scarce for spot delivery. There is not much new inquiry. We quote 50 per cent. ferrosilicon for forward delivery at \$54.50 to \$55, Pittsburgh. We quote 10 per cent. blast furnace silicon at \$23; 11 per cent., \$24; 12 per cent., \$25, f.o.b. cars, Jisco and Ashland furnaces.

Skelp.—A sale of about 2000 tons of sheared steel skelp has been made on the basis of about 1.40c., Pittsburgh. We quote: Grooved steel skelp, 1.30c. to 1.35c.; sheared steel skelp, 1.40c. to 1.45c.; grooved iron skelp, 1.65c. to 1.70c., and sheared iron skelp, 1.75c. to 1.80c., all f.o.b. Pittsburgh, usual terms.

Rods.—The market continues quite firm. Several large consumers of chain rods are now figuring on their supply for first half of next year. We continue to quote Bessemer, chain and open hearth rods at \$28.50, Pittsburgh.

Muck Bar.—This material continues scarce and high prices are being asked for best grades. The two or three concerns in the Pittsburgh district that make muck bar for the open market are pretty well sold up for some time ahead. We quote best grades, made from all pig iron, at \$31 to \$31.50, Pittsburgh. Eastern muck bar, made from part scrap, is being offered in this market at \$29 to \$29.50.

Steel Rails.—New orders for light steel rails and specifications against contracts in the past week were better, the Carnegie Steel Company having booked about 3000 tons. The company has also received good contracts for standard sections for export, and it appears likely that in the future a good deal of the foreign business in standard sections secured by the United States Steel Products Company will be rolled at the Edgar Thomson Works of the Carnegie Company. We quote standard sections of Bessemer rails at \$28, mill, and light rails as follows: 8 to 10 lb., \$32; 12 to 14 lb., \$29; 16, 20 and 25 lb., \$28; 30 and 35 lb., \$27.75, and 40 and 45 lb., \$27, Pittsburgh. We quote steel axles at 1.75c. to 1.80c., and splice bars at 1.50c., at mill.

Structural Material.—New business has been very light. The McClintic-Marshall Construction Company has taken two railroad bridges, about 600 tons, and the American Bridge Company has secured contracts for about 2000 tons of railroad bridge work. We continue to quote beams and channels up to 15-in. at 1.40c. in large lots and 1.45c. in small lots, f.o.b. Pittsburgh.

Plates.—Inquiries have been received by local plate mills for the new battleship to be built by the Government and which will require 10,000 to 11,000 tons of plates, shapes and bars. Inquiries are also being figured on for about 2500 tons of plates for two torpedo boats. The contract for the gas holder at Kansas City was placed with R. D. Wood & Co. at Philadelphia, and the plates, about 2000 tons, will likely be furnished by an Eastern mill. Inquiries are in the market from two Western roads for 1000 cars for each, but whether they will be placed remains to be seen. Current business in plates continues light, and none of the mills is able to run full. The local market on ¼-in. and heavier plates in the wider sizes is 1.40c., Pittsburgh, but this is being shaded as a base price for delivery in certain districts. Narrow plates are still being sold at 1.35c., at mill.

Sheets.—The volume of new business continues to show an increase, consumers having pretty definitely decided that they are safe in placing contracts at today's prices for delivery through first quarter of next year. The American Sheet & Tin Plate Company is operating close to 80 per cent. of its sheet mill capacity. The market is firm, very little being heard of any cutting. The market is based on 2.20c. for No. 28 black and 3.20c. for No. 28 galvanized, most of the tonnage recently entered being at these prices. Corrugated roofing sheets are \$1.60 and galvanized \$2.80 per square on No. 28 gauge, 2½-in. corrugations. The schedule

THE IRON AND METAL MARKETS

of prices on black and galvanized and on roofing sheets is printed on a previous page.

Tin Plate.—Specifications against contracts are active, but little new business is being placed, this being the dull season in the tin plate trade. The American Sheet & Tin Plate Company is operating to about 85 per cent. of its tin plate capacity, and is turning out more product than ever before in its history. The market is firm. We continue to quote 100-lb. cokes at \$3.60 per base box, f.o.b. Pittsburgh.

Bars.—New business in both iron and steel bars has been light. Specifications against contracts from the implement makers are fairly satisfactory, but from other consumers, such as the railroads, are not coming in very freely. The local market on steel bars is strong at 1.40c., but for some points of delivery, notably in the Chicago district, this is being shaded as a basing price. We quote soft steel bars at 1.40c. in large lots and common iron bars at about 1.45c., Pittsburgh. Prices on the latter are weak and would likely be shaded on desirable specifications.

Spelter.—The market continues quite firm, and prime grades of Western are held at 5.42½c., East St. Louis, equal to 5.55c., Pittsburgh.

Hoops and Bands.—A fair amount of new business is being placed in small lots, but the mills are running mostly on specifications against old contracts which are coming in at a fairly satisfactory rate. Prices are firm and we quote hoops at 1.50c. in large lots and 1.55c. in small lots; bands, 1.40c. in carload and larger lots and 1.45c. in small lots, the latter subject to extras as noted in the steel bar card, dated September 1, last year.

Cotton Ties.—Prices are unchanged, being 77c. per bundle for October delivery and 77½c. for November shipment.

Spikes.—Very little new business is being placed, the railroads only giving out scattered orders for small lots for repair work. The demand for small railroad and boat spikes is also dull. All the spike makers are complaining about the present unsatisfactory business. We quote standard sizes of railroad spikes at 1.50c. to 1.55c. for Western shipment and 1.55c. to 1.60c. for local trade. We quote small railroad and boat spikes at 1.60c. to 1.65c., base, in carload and larger lots.

Rivets.—New orders continue mostly for small lots to cover actual needs, but specifications on contracts are coming in fairly well. Regular prices of 1.90c. on structural rivets and 2c. on boiler rivets are shaded.

Shafting.—The new demand is very dull and is mostly in small lots to cover current needs. There is no improvement in specifications against contracts, which have been unsatisfactory for some time. Regular discounts on shafting are 55 per cent. off in carload and larger lots; and 50 per cent. off in small lots, delivered in base territory. On desirable contracts and for large lots 55 and 5 per cent. is being named.

Wire Products.—New orders being placed for wire nails and also specifications against contracts are heavier now than at any period for some months. One leading maker of wire nails reports that it is running double turn and is about two weeks behind in shipments. The demand for cut nails is also better. There is very little buying in plain wire, as the season is pretty well over.

Merchant Pipe.—The volume of new business being entered by the pipe mills is quite heavy, being larger than expected so late in the year. Jobbers and consumers are sending in urgent requests for prompt shipments, showing that stocks are very low. The Barnsdall interests have placed a contract for 15 miles of 6-in. and the Ohio Fuel Supply Company 8 miles of 2-in., both for gas lines. It is stated that the new discounts on both iron and steel pipe, printed in full on a previous page, are being firmly maintained.

Boiler Tubes.—A fair amount of new business is being placed in railroad tubes, one leading mill reporting that it has more orders on its books at present for railroad tubes than at any period for some months. The new demand for merchant tubes continues very dull.

Coke.—A local interest bought late last week about 15,000 tons of standard grade furnace coke for November delivery at \$1.55 at oven, the lowest price reached in furnace coke of standard make for a long time. Another consumer has also bought 15,000 to 20,000 tons of furnace coke for delivery during the first half of 1911 at the reported price of \$1.75 at oven. Another deal involving a large tonnage of furnace coke has been closed on a sliding scale basis, so many tons of coke for 1 ton of basic iron. The output of coke in the Upper and Lower Connellsville regions last week was 351,988 net tons, an increase over the previous week of about 1500 tons. We quote standard grades of blast furnace coke for spot shipment at \$1.55 to \$1.60 and for delivery over the remainder of this year at \$1.70 per net ton,

at oven. Standard makes of 72-hour foundry coke for spot shipment are held at \$2.15 to \$2.25 to consumers, and for delivery over the remainder of this year and into the first half of next year \$2.25 to \$2.50 per net ton, at oven, are being quoted.

Iron and Steel Scrap.—New inquiries from consumers in the past week have been a little better and some dealers are asking about 25c. a ton higher for heavy steel scrap than they were quoting last week. There is a fair demand for heavy melting stock, machine shop turnings and cast iron borings, but prices continue low. The sale of 800 tons of turnings noted in this report last week at \$8.25, Pittsburgh, should have read \$9.65, delivered, or about \$8.60, Pittsburgh. Dealers quote about as follows, per gross ton, for delivery in the Pittsburgh district or elsewhere, as noted:

Heavy steel scrap, Steubenville, Folsom, Sharon, Monessen and Pittsburgh delivery.....	\$14.25 to \$14.50
No. 1 foundry cast.....	13.75 to 14.00
No. 2 foundry cast.....	12.75 to 13.00
Bundled sheet scrap, at point of shipment.....	10.00 to 10.25
Re-rolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.....	15.75 to 16.00
No. 1 railroad malleable scrap.....	13.50 to 13.75
Grate bars.....	12.00 to 12.25
Low phosphorus melting stock.....	17.50 to 17.75
Iron car axles.....	24.50 to 24.75
Steel car axles.....	21.25 to 21.50
Locomotive axles.....	24.50 to 25.00
No. 1 bushing scrap.....	12.50 to 12.75
No. 2 bushing scrap.....	8.50 to 8.75
Old car wheels.....	14.25 to 14.75
Sheet bar crop ends.....	15.75 to 16.00
Cast iron borings.....	8.00 to 8.25
Machine shop turnings.....	8.50 to 8.75
Old iron rails.....	16.00 to 16.25
No. 1 wrought scrap.....	15.00 to 15.25
Stove plate.....	11.75 to 12.00
Heavy steel axle turnings.....	9.75 to 10.00

Chicago

FISHER BUILDING, October 26, 1910.—(By Telegraph.)

The market has not responded to any notable extent to the private advices that are current regarding a settlement of the railroad controversy. There has been improvement in several lines of finished materials the past week, but it comes chiefly from other sources. There has been a marked increase in the number of orders from store for small lots, and the mills also report an increased demand for sheets. Specifications for bars are about normal and there is more new business. The distribution of hardware is normal and carries with it a movement of wire products about equal to the ordinary rate of consumption. A very large amount of structural business is in the hands of architects throughout the West, but the closing of contracts awaits a more favorable money market and it is not expected that much new business in this line will be placed with fabricators until after the election. Difficulty in placing municipal bonds has restricted to some extent the tonnage of water pipe that has gone into the ground the past year and the condition of the bond market will have a considerable bearing on the amount of municipal business that is placed the coming year. Inquiries have appeared from Western roads for prices on track supplies for 1911, but rail contracts for next year are held in abeyance. The purchasing departments of the railroads have not been released from the restrictions that were put on their activities last summer and they continue buying materials and supplies in small lots for immediate shipment. The scrap market is steady and dealers show more confidence.

Pig Iron.—A thresher interest at Racine has inquired for 7000 tons of foundry iron, half Northern and half Southern, for delivery during the first half of 1911. Another buyer west of Chicago inquires for 1000 tons of Southern for first half. A Chicago foundry is in the market for 2000 tons of Northern and another local buyer for 500 tons. There are two inquiries in this territory from points outside of Chicago for Northern foundry iron, one for 1200 and another for 800 tons. There is a steady improvement in the number of small orders, from 100 to 500 tons, for both Northern and Southern iron. There has been a notable tendency among foundries this year to purchase in small lots for prompt or early shipment, rather than on contracts for extended delivery. The steady accumulation of stocks at furnaces has encouraged this policy, as well as the fact that during the past year the market has receded after several of the largest buyers in this territory had made purchases for extended deliveries. The malleable foundries bought liberally in January and February for the last half of this year and now have large stocks and iron still due them on contracts at a cost from \$2 to \$3 higher than current prices. They are pursuing a conservative policy at the present time and have bought very little iron for next year. The opinion is expressed in the trade that not more than

THE IRON AND METAL MARKETS

5 per cent. of the iron needed for the first half of 1911 has been purchased in this territory. Recent developments in the financial world have created a better feeling in the market, and it is evident that large buyers are watching conditions closely. The following quotations are for October, November and December shipment, Chicago delivery:

Lake Superior charcoal.....	\$18.00 to \$18.50
Northern coke foundry, No. 1.....	16.50 to 17.00
Northern coke foundry, No. 2.....	16.00 to 16.50
Northern coke foundry, No. 3.....	15.75 to 16.00
Northern Scotch, No. 1.....	17.00 to 17.50
Southern coke, No. 1.....	15.85 to 16.35
Southern coke, No. 2.....	15.35 to 15.85
Southern coke, No. 3.....	15.10 to 15.60
Southern coke, No. 4.....	14.85 to 15.35
Southern coke, No. 1 soft.....	15.85 to 16.35
Southern coke, No. 2 soft.....	15.35 to 15.85
Southern gray forge.....	14.60 to 15.10
Southern mortfed.....	14.60 to 15.10
Malleable Bessemer.....	16.00 to 16.50
Standard Bessemer.....	17.40 to 17.90
Jackson Co. and Kentucky silvery, 6%.....	19.40 to 19.90
Jackson Co. and Kentucky silvery, 8%.....	20.40 to 20.90
Jackson Co. and Kentucky silvery, 10%.....	21.40 to 21.90

(By Mail.)

Billets.—The market is quiet with only an occasional inquiry for forging billets, on which the price is maintained for current orders at \$28, base, Chicago.

Rails and Track Supplies.—Inquiries have appeared in the market for track supplies for 1911 shipment, but no large inquiries for rails are reported and actual sales last week were light. With a few exceptions, Western roads have all the rails they need for this year and it is natural that they should defer until a little later the placing of contracts for next year. We quote standard railroad spikes at 1.70c. to 1.75c., base; track bolts with square nuts, 2.25c. to 2.30c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., \$26; 30 to 35 lb., \$26.75; 16, 20 and 25 lb., \$27; 12 lb., \$28, Chicago.

Structural Material.—Only a small aggregate amount of structural work was closed last week. Investors in large projects will probably wait until after election before closing. It is understood, however, that money is becoming easier and this is a very important factor in the market for fabricated material. The Hubbard Steel Foundry Company, Chicago, has let a contract for additions to its steel foundry at East Chicago requiring 300 tons of steel. This business was placed with the Worden-Allen Company, Milwaukee. The James Stewart Company has taken two general contracts on which the fabricated work is not reported placed. One is the Burns Theatre at Colorado Springs, Colo., 550 tons, and the other the St. Mary's Academy at Denver, 620 tons. The general contract for a new hotel at French Lick Springs, Ind., has been let to W. E. Stilwell, La Fayette, but the steel order, 824 tons, has not been placed. There is a good run of small orders for fabricated work. We quote plain material from mill, 1.58c. to 1.63c., Chicago; from store, 1.80c. to 1.90c., Chicago.

Plates.—Scattering orders are heard from in the market for small lots of cnrs, but no large inquiries are reported as yet from important Western railroad systems. The smaller independent mills continue to shade prices on such sizes of plates as they roll, but the larger manufacturers continue to hold 1.40c., Pittsburgh. We quote mill prices at 1.53c. to 1.63c., Chicago; store prices, 1.80c. to 1.90c., Chicago.

Sheets.—Encouraging reports come from the sheet mills, as new business is increasing and specifications are also more satisfactory. Many requests are received to anticipate shipments and the tone of the market is improving. Based on the price of 3.20c., Pittsburgh, for No. 28 galvanized, in carload lots to jobbers, the differentials ruling in the Chicago market are as follows: No. 30, 3.68c.; No. 29, 3.48c.; No. 28, 3.38c.; No. 27, 3.23c.; Nos. 25 and 26, 3.08c.; Nos. 23 and 24, 2.88c.; Nos. 18 to 22, 2.78c.; Nos. 15 to 17, 2.63c.; Nos. 12 to 14, 2.48c.; Nos. 10 and 11, 2.38c. The differentials on black sheets remain unchanged. No. 10 blue annealed sheets are quoted at 1.83c., Chicago, and No. 28 black, 2.38c. Prices from store, Chicago, are: No. 10, 2.10c. to 2.20c.; No. 12, 2.15c. to 2.25c.; No. 28 black, 2.85c. to 2.95c.; No. 28 galvanized, 3.65c. to 3.75c.

Bars.—Specifications for soft steel bars are running about normal and there is a little improvement in new business from casual buyers. Improvement is also noted in the demand for hard steel bars. The railroads have not changed their policy materially in the purchase of bar iron, their business coming generally in 100-ton lots for early shipment. The bar iron market, however, is a little firmer, and concessions on soft steel bars are only heard of in exceptional cases, usually from small mills, which do not take yearly contract business. We quote as follows: Soft steel bars, 1.58c.; bar iron, 1.35c. to 1.40c.; hard steel bars rolled from old rails, 1.45c. to 1.50c., all Chicago. From store, soft steel bars, 1.80c. to 1.90c.

Rods and Wire.—The hardware trade is running on a normal basis, the average of reports from jobbers indicating that they are doing a little more this fall than a year ago. This carries with it a normal distribution of wire products. Owing to the fact that the capacity of the mills of the country is in excess of normal consumption, there are reports that independent mills are making concessions on desirable business, but the leading interest reports prices firm. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.68c.; wire nails, 1.88c.; painted barb wire, 1.88c.; galvanized, 2.18c., all Chicago.

Merchant Steel.—Shipments of merchant steel into this territory during September exceeded all former records for that month both in the amount and the value. The same condition was reported for the month of August, but September shipments exceeded those of August. There has been a material quickening in the past few days in the demand from store, coming chiefly in small orders, which foot up a relatively large tonnage.

Cast Iron Pipe.—Detroit is the only city that has come into the market thus far with specifications for any large tonnage of water pipe for winter shipment. Important developments in this market are not expected until after the election, as the activity of municipalities has been checked this fall by high interest rates and the difficulty in selling municipal bonds. Cities with the highest credit have been unable to borrow at 4 per cent., and even 4½ per cent. bonds have not been taken freely by investors. Improvement in the money market will undoubtedly bring out a large amount of water pipe business during the winter. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., \$27; 6 to 12 in., \$26; 16-in. and up, \$25, with \$1 extra for gas pipe.

Old Material.—The market is very quiet, with practically no change in prices. This branch of trade has established a record this fall for holding several months at a practically stagnant level of values. One reason for this peculiar condition is that there has been a ready market for certain controlling lines of material at prices fixed by the buyer. Heavy melting steel, for example, has been going since last summer at about \$12.50, delivered, and No. 1 railroad wrought around \$12. Other grades of material have settled into a ratio of values corresponding to these two lines, and there will be no change in the general level until the buyers of these two grades raise their bids to attract a larger tonnage, unless the steel foundry interests or other large buyers come in for an unusual tonnage. A notable feature the past week which reflects a change in the tone of the market is that dealers are not peddling scrap over the telephone. Buyers get many inquiries from dealers who want to know when they will be in the market, but it would seem that either shipments have fallen off or scrap is easier to place when it arrives. The prices quoted below are for delivery to buyers' works, all freight and switching charges paid. Sellers of scrap usually receive 50c. to \$1 less in this district, owing to high switching charges. Following prices are per gross ton, delivered, Chicago:

Old iron rails.....	\$16.00 to \$16.50
Old steel rails, rerolling.....	15.25 to 15.75
Old steel rails, less than 3 ft.....	13.50 to 14.00
Relaying rails, standard sections, subject to inspection.....	24.00 to 25.00
Old car wheels.....	14.00 to 14.50
Heavy melting steel scrap.....	12.25 to 12.75
Frogs, switches and guards, cut apart.....	12.25 to 12.75
Shoveling steel.....	11.75 to 12.25

The following quotations are per net ton:

Iron angles and splice bars.....	\$14.00 to \$14.50
Iron car axles.....	19.50 to 20.00
Steel car axles.....	19.50 to 20.00
No. 1 railroad wrought.....	11.75 to 12.25
No. 2 railroad wrought.....	10.75 to 11.25
Springs, knuckles and couplers.....	11.50 to 12.00
Locomotive tires, smooth.....	17.00 to 17.50
No. 1 dealers' forge.....	10.50 to 11.00
Steel axle turnings.....	8.25 to 8.75
Machine shop turnings.....	7.00 to 7.50
Cast and mixed borings.....	4.75 to 5.25
No. 1 busheling.....	10.00 to 10.50
No. 2 busheling.....	8.00 to 8.50
No. 1 boilers, cut to sheets and rings.....	8.50 to 9.00
No. 1 cast scrap.....	12.50 to 13.00
Stove plate and light cast scrap.....	10.75 to 11.25
Railroad malleable.....	11.00 to 11.50
Agricultural malleable.....	10.50 to 11.00
Pipes and flues.....	9.00 to 9.50

Birmingham

BIRMINGHAM, ALA., October 24, 1910.

Pig Iron.—October has been rather a keen disappointment to the pig iron producers here. With large crops assured, and with such good prospects for heavy traffic, it had been thought that the railroads would have begun their long delayed buying movement, but thus far there is little evidence of a real desire to place orders for anything that

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can well be deferred even a few weeks longer. The consequence is that prices remain pretty well at low level. Practically none of the 1911 rail tonnage has as yet been placed, and the iron and steel makers of Birmingham are living in the hope that when this buying begins there will come the better demand for other iron and steel products that was looked for this month. All the pipe producers—water, gas and sanitary—have been taking small lots of pig iron the past week, but practically only at concessions below the \$11.50 schedule. No orders of consequence were placed for 1911, though there are still some good inquiries afloat from large buyers, and these buyers would doubtless close if a schedule of \$11 would be made for the first half. There has been no material change in production in the week just closed. Sloss-Sheffield blew out one stack on the Tennessee River, but put in another there. It is stated that one company will blow out a stack this coming week, but it is expected that the stack at Holt will go in, making an offset there. So, all told there is little change to record, either in production, shipments, or volume of new business.

Cast Iron Pipe.—The makers of water and gas pipe continue to run along on fairly full capacity, depending upon the hand-to-mouth buying that has sustained them for some months. There is virtually no appreciable margin of profit in pipe at this time, and therefore no particular inducements are being made in any direction to land big orders for forward delivery. The production of sanitary pipe will probably be increased. This correspondence last week mentioned an increase in output in two directions, and it is reported this week that one other large manufacturer will add nearly 50 per cent. to his capacity, due largely to the heavy call for export on which better prices are said to be realized than prevail just now in the local trade. We quote water pipe as follows, f.o.b. cars foundries in this immediate district: 4 to 6 in., \$22; 8 to 12 in., \$21; over 12-in., average, \$20, with the usual differential of \$1 per ton for gas pipe.

Old Material.—The scrap market has fallen back into its summer dullness. Nominal prices are about as follows:

Old iron axles.....	\$15.00 to \$15.50
Old iron rails.....	13.00 to 13.50
Old steel axles.....	14.50 to 15.00
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	9.00 to 9.50
No. 1 country.....	8.00 to 8.50
No. 2 country.....	7.50 to 8.00
No. 1 machinery.....	9.50 to 10.00
No. 1 steel.....	11.50 to 12.00
Tram car wheels.....	9.50 to 10.00
Standard car wheels.....	10.50 to 11.00
Light cast and stove plate.....	8.00 to 8.50

Philadelphia

PHILADELPHIA, PA., October 25, 1910.

A shade better feeling is observable in the pig iron market and a little more business of a forward character has been transacted at unchanged prices. The demand for finished materials is still quiet, but a more expectant feeling is noted. The railroads in this territory will probably soon come into the market for rail requirements for next year, and it is believed that the tonnage taken will compare favorably with that for this year. The trade also takes considerable encouragement from the reports that the railroads will become more active general buyers at an early date. Steel billets are in light demand, with a tendency toward easier prices. Very little business has been done in old materials and prices of some grades are weak. The demand for coke continues irregular.

Iron Ore.—There has been an entire absence of business. It is also interesting to note that there were no importations of foreign ore at this port during the week, the first occurrence of this character for a long period.

Pig Iron.—There is a greater disposition to place orders for requirements over the first quarter of next year, but it cannot be said that any real movement in this direction has set in, although the trade does not believe that it can be long delayed. More inquiry for early 1911 delivery is reported, but sellers are not overly anxious to accept business, either at to-day's prices or at a slight advance, which has in a few cases been obtained. Outside of buying by the cast iron pipe and stove interests, business has been small; the former consumers placed orders for about 6000 tons of low grade Northern iron for delivery during the remainder of this year at prices ranging from \$14.25 to \$14.50, delivered. Stove manufacturers took an aggregate of 4000 tons for first quarter of next year, mostly low silicon 2 X at \$15.75, delivered. In a few instances \$16, delivered, has been done for moderate lots of No. 2 X for first quarter, and in a few exceptional cases even a better price was obtained. For this year's shipment \$15.75, delivered, appears to be the minimum for standard brands of Eastern No. 2 X foundry, and this is now pretty generally believed to represent the bottom. One of the Delaware River cast

iron pipe makers is out with an inquiry for 5000 tons of low grade foundry iron for January and February delivery, expected to be closed during the week. A sale of a round lot of charcoal iron as well as a good quantity of foundry iron for first half delivery had also been reported, but few sellers are disposed to accept business for delivery extending beyond the first quarter. Virginia makers, as a rule, will not sell beyond January, although in instances orders from regular customers, on which the delivery has been more extended, have been taken, usually at an advance over prices which are acceptable for deliveries during the next three months. For spot delivery \$13, furnace, has been done in a few cases, but the general market for Virginia 2 X or 2 plain foundry, three months delivery, is \$13.25, furnace equal to \$16 to \$16.25, delivered in this vicinity. Very little movement in Southern iron has been reported. While the demand for forge iron has not been active, a few small sales to rolling mills have been made; one lot of 500 tons for this year's shipment was closed at \$14.50, delivered. The larger consumers of steel making iron show no interest in the market; early purchases, at the present rate of consumption, are sufficient in some instances not only to run them through the remainder of the year but the early months of 1911. Several of the smaller buyers have inquiries out, one for December and first quarter delivery, and another for January-February requirements, but in neither case is the tonnage large, and, as the buyers' ideas are about 50c. under recent quotations, no business has resulted. The present price, \$15, delivered, is purely nominal and it is difficult to say what the price would be should any real demand develop. While there has been no demand in this district for low phosphorus pig, small sales for delivery outside have been made at equal to \$22.50, delivered here. Producers of pig iron are not forcing business, being rather inclined to take as little business as possible at low prices, with a view of curtailing production after the turn of the year should there be no improvement in demand or prices. The following range represents the market for standard brands delivered in buyers' yards in this vicinity, for shipment during the remainder of the year, or in some instances for the first quarter of 1911:

Eastern Pennsylvania, No. 2 X foundry.....	\$15.75 to \$16.00
Eastern Pennsylvania, No. 2 plain.....	15.25 to 15.50
Virginia, No. 2 X foundry.....	16.00 to 16.25
Virginia, No. 2 plain.....	16.00 to 16.25
Gray forge.....	14.50 to 14.75
Basic.....	15.00
Low phosphorus.....	22.50

Ferromanganese.—There is still some inquiry for small lots for delivery in this territory, but little business has been closed. Quotations are unchanged, \$39, Baltimore, representing the price for either near future or first half of next year shipment.

Billets.—The billet situation shows no change; consumers continue to place orders for small lots for early delivery and show no interest in the forward market. Mills in the East are operating at about half capacity and have little business ahead. Open hearth rolling billets delivered in this territory are still quoted in ordinary lots at \$26, but this price could probably be shaded for desirable business. Forging billets continue in fair demand and are firm at \$28, Eastern mill, with the usual extras for high carbons and special sizes.

Plates.—While there is still a comparatively good number of orders, few exceed 100 tons, and the aggregate is still below the tonnage for the corresponding period last month. There is an absence of any inquiry for sizable tonnage, although consumers would contract for moderate lots for extended delivery if makers would accept such business. Prices are apparently being well maintained, although efforts have been made to get concessions, but without success, 1.55c, delivered in this territory, representing the minimum for ordinary plates delivered in buyers' yards.

Structural Material.—Makers report the demand during the week to have been less active, the bulk of the business placed being in small lots for early delivery. Little new business of any size has developed. Bids are being taken against revised plans for the Union League addition, which will require about 1000 tons. Several small buildings to be erected in this and nearby cities are also being figured on, but immediate business is light and mills are gradually catching up on orders on hand. Prices appear to be well maintained, at 1.55c, delivered, for plain shapes.

Sheets.—A better demand, particularly for prompt deliveries, is noted. Nearby mills have a larger volume of business on their books and the situation looks more encouraging, although consumers still withhold orders for extended delivery, placing business from time to time in small lots, as requirements develop, and then urging delivery. Prices are being well maintained. Eastern makers naming the following range for prompt deliveries: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

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Bars.—There is little snap to the demand, consumers placing orders, as a rule, for small lots for early delivery. Not enough demand has developed in refined iron bars to test the market and quotations range from 1.40c. to 1.45c., delivered in this territory, for business of an ordinary character. There has been a little better demand for steel bars, particularly from agricultural implement makers, and prices are pretty well maintained at 1.55c., delivered in this vicinity.

Coke.—Foundry coke has been the more active and some little business, both for prompt and forward delivery, is reported. Spot foundry coke has been sold down as low as \$2, at oven, but the better grades bring \$2.15 to \$2.20. Forward deliveries command from \$2.25 to \$2.50, at oven, according to quality. There has been no demand for furnace coke for forward delivery, but a few sales of prompt coke of this grade have been made at \$1.50 to \$1.55, at oven, with forward at \$1.60 to \$1.85. The following range of prices, per net ton, delivery in this vicinity, about represents the market:

Connellsville furnace coke.....	\$3.85 to \$4.10
Foundry coke.....	4.40 to 4.75
Mountain furnace coke.....	3.45 to 3.70
Foundry coke.....	4.00 to 4.35

Old Material.—The market is somewhat weaker, owing to the absence of any material demand. In the majority of cases consumers are well supplied and show but little interest in the market, and tenders by sellers frequently go begging. No movement in heavy steel melting scrap is reported; several consumers make offering prices of 25c. to 50c. below the market, knowing that sellers are not likely to accept such propositions. With productive capacity at about half normal, and mills pretty well supplied, consumers feel that they can afford to await developments. A sale of a few hundred tons of low phosphorus scrap at \$19 for first quarter delivery is reported. A round lot of old car wheels has been sold at the market. Rolling mill grades are generally dull. Railroad wrought and No. 1 forge and borings have been sold in small lots at prices lower than quoted last week. The following range about represents bids and offers for deliveries in buyers' yards, eastern Pennsylvania and nearby points, carrying a freight rate from Philadelphia ranging from 45c. to \$1.35 per gross ton:

No. 1 steel scrap and crops.....	\$13.75 to \$14.25
Old steel rails, reolling.....	16.00 to 16.50
Low phosphorus.....	19.00 to 19.50
Old steel axles.....	20.00 to 20.50*
Old iron axles.....	26.50 to 27.50*
Old iron rails.....	18.00 to 18.50*
Old car wheels.....	13.75 to 14.25
No. 1 railroad wrought.....	16.00 to 16.50
Wrought iron pipe.....	13.00 to 13.50
No. 1 forge fire.....	11.50 to 12.00
No. 2 light iron.....	7.50 to 8.00
Wrought turnings.....	8.50 to 9.00
Cast borings.....	8.75 to 9.25
Machinery cast.....	14.00 to 14.50
Railroad malleable.....	13.50 to 14.00
Grate bars.....	11.50 to 12.00
Stove plate.....	10.00 to 10.50

* Nominal.

St. Louis

ST. LOUIS, MO., October 24, 1910.

The notice that 1300 metal workers of the Missouri Pacific system went out from its shops on a strike October 21 caused some concern to be felt in business circles at the close of the week. General business, as represented by transactions with the leading banks, is reported as fairly satisfactory, and the demand for money for the movement of the cotton crop is very heavy.

Coke.—All the leading sales agencies, with a single exception, report a dull market. The seller referred to closed a contract for 2000 tons of foundry coke, for shipment over the first half of 1911. Merchant sellers, with also but one exception, were doing but little business, but this house stated that it was getting a fair run of orders for small lots, mainly from outside buyers. While Eastern markets are said to be weaker, there are no lower prices quoted here, though bids under the market are sometimes submitted. Car shortage in the coke districts is becoming more pronounced, and it is believed that it may result in advancing prices in distributing markets. We quote standard Connellsville, 72-hour foundry at \$2.25 per net ton at oven for either prompt or contract delivery.

Pig Iron.—With some of the principal offices the past week has ruled exceptionally dull. Others, however, secured some contracts—in fact, in the case of a leading house, some business was done that, it was intimated, reached a quite large volume, but particulars could not be learned. Admission of the sale of one lot of 900 tons of Southern No. 2 foundry was, however, made. Another house reports having a local inquiry for 2000 tons of No. 2 soft foundry for shipment over the first half of 1911, and other inquiries totaling 3000 to 3500 tons, practically all for Southern iron and for first half of 1911. A sale of 500 tons of Lake Superior

charcoal iron was reported for shipment over the remainder of this year and first quarter of 1911. Another house reports sales to various buyers of 700 tons of Southern No. 2 foundry, for shipment over the first half of 1911, together with inquiries as follows: One for 1500 tons and two for 1000 tons each, all Southern No. 2 foundry, for shipment over the first half of 1911. The market continues weak and irregular, most of the business being worked on the basis of firm offers and this naturally results in shading prices. Well-known brands, especially those having a desirable analysis, are held with a show of firmness at outside figures, but with little buying resulting. As previously reported, several furnaces refuse to name prices for shipment beyond New Years. We quote Southern No. 2 foundry at \$11, Birmingham, for shipment over the remainder of the year, with special brands held 25c. to 50c. per ton higher. For shipment over the first half of 1911, \$11.50 is asked, but it is intimated that some furnaces are accepting 25c. per ton less on firm bids.

Old Material.—Consumers are not in the market, except to secure such lots as may be picked up at attractive figures. No large tonnage can be worked at market prices. There is some business passing between dealers at low prices. No railroad lists were reported last week. The market is weaker and in some instances lower. Relaying rails have declined in price. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails.....	\$14.00 to \$14.50
Old steel rails, reolling.....	13.00 to 13.50
Old steel rails, less than 3 ft.....	12.25 to 12.75
Relaying rails, standard sections, subject to inspection.....	23.50 to 24.00
Old car wheels.....	13.50 to 14.00
Heavy melting steel scrap.....	12.00 to 12.50
Frogs, switches and gards, cut apart.....	12.00 to 12.50

The following quotations are per net ton:

Iron fish plates.....	\$11.00 to \$11.50
Iron car axles.....	18.50 to 19.00
Steel car axles.....	17.50 to 18.50
No. 1 railroad wrought.....	12.00 to 12.50
No. 2 railroad wrought.....	11.00 to 11.50
Railway springs.....	10.00 to 10.50
Locomotive tires, smooth.....	16.50 to 17.00
No. 1 dealers' forge.....	9.00 to 9.50
Mixed borings.....	4.50 to 5.00
No. 1 bushelling.....	10.50 to 11.00
No. 1 boilers, cut to sheets and rings.....	9.00 to 9.50
No. 1 cast scrap.....	11.50 to 12.00
Stove plate and light cast scrap.....	9.00 to 9.50
Railroad malleable.....	9.00 to 9.50
Agricultural malleable.....	8.50 to 9.00
Pipes and flues.....	9.00 to 9.50
Railroad sheet and tank scrap.....	8.50 to 9.00
Railroad grate bars.....	8.00 to 8.50
Machine shop turnings.....	7.50 to 8.00

The freight houses of the Clover Leaf-Alton Railroad Company in East St. Louis were destroyed by fire October 20, causing a loss conservatively estimated at \$500,000, all of which is covered by insurance.

Ground will be broken early next year for the \$1,000,000 Barnes Hospital, to be erected at Forest Park and Kings Highway boulevards. The plans have been accepted by the trustees of the fund and will soon be submitted for bids.

C. J. Crawford, president of the Puxico Iron Company, states that progress is being made in reopening Pilot Knob. The company will be ready to ship ore as soon as the repairs are completed on the blast furnace of the St. Louis Blast Furnace Company, which will be about November 1.

Cleveland

CLEVELAND, OHIO, October 25, 1910.

Iron Ore.—Weather conditions have been so favorable during the entire month that the plans of the shippers to have an early closing of the season of navigation have not been interfered with. Boats are being tied up gradually and it is expected that by the middle of November 75 per cent. of the vessel tonnage will be out of commission. The total ore movement for the season will be very close to that of 1909. We quote prices as follows: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range non-Bessemer, \$4.20; Mesaba non-Bessemer, \$4.

Pig Iron.—The local market shows a little improvement. Some sales are reported and better inquiry is coming from northern and central Ohio consumers, who have shown little interest in the market for several weeks past. A local furnace has sold 1000 tons of No. 2 foundry to a central Ohio consumer for first half delivery, and the same concern is in the market for 1000 tons of Southern foundry. We also note the sale of 500 tons of No. 2 Southern in central Ohio at \$11.50, Birmingham, for the first half delivery. A northern Ohio manufacturer is in the market for 1000 tons of No. 2 Northern for the first half and about 200 tons of high silicon. A northern Ohio pipe works has an inquiry out for 1000 tons of Nos. 3 and 4 foundry iron for November and December delivery. Another inquiry is from

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a Canton consumer for 1800 tons of malleable iron, for delivery through the second quarter and last half of next year. Other smaller inquiries are reported. Some consumers who have not come out with definite inquiries are feeling the market. The general sentiment appears a little better, but producers are not looking for any higher prices for some time. The minimum quotation on No. 2 foundry for the first half is \$14, at furnace, but some producers still decline to meet this price. For Cleveland delivery for the first half this grade is quoted at \$14.50, delivered. Southern iron is firm at \$11.50, Birmingham, for the first half. For prompt shipment and for the remainder of the year we quote, delivered, Cleveland, as follows:

Bessemer	\$15.90
Northern foundry, No. 1.....	\$14.75 to 15.00
Northern foundry, No. 2.....	14.25 to 14.50
Northern foundry, No. 3.....	14.00 to 14.25
Gray forge.....	14.00 to 14.25
Southern foundry, No. 2.....	15.35 to 15.85
Jackson Co. silvery, 8 per cent. silicon.	19.05 to 19.25

Coke.—The market is very quiet, the only demand being for small lots of spot foundry coke. Furnaces seem to be in no hurry in placing their contracts for their first half requirements, but are showing some interest in prices. We quote standard Connellsville furnace coke at \$1.60 to \$1.70 per net ton, at oven, for spot shipment, and \$1.70 to \$1.75 for the remainder of the year. Connellsville 72-hour foundry coke is held at \$2.10 to \$2.25 for spot shipment and \$2.25 to \$2.50 for the remainder of the year and the first half.

Finished Iron and Steel.—General reports indicate that the sentiment is better. Actual orders, however, show little, if any, change. Mill agencies report a good volume of orders for steel bars, plates and structural material, but these are all for small tonnages for immediate requirements. In many cases orders are accompanied by the request that shipments be rushed. Stocks in manufacturers' hands are generally low, so that the feeling prevails that as soon as general business conditions become more active and buyers become convinced that present prices will be maintained, the demand in finished lines will be quickly stimulated. Steel bar specifications are fair and prices are being firmly maintained. The demand for twisted bars for concrete construction work continues quite active. In structural lines not much new work requiring round tonnages is in prospect, with the exception of a few buildings previously noted, which are still in the hands of architects, and for which bids will be received shortly. Local fabricators are quite well filled with small work, the material for which is being bought in small lots as needed. Structural prices are being firmly maintained at 1.40c., Pittsburgh. While the demand for plates is light, a local mill has enough orders on hand to keep it running full for about 30 days. Boiler shops in this territory are well filled with work, and while new orders are not numerous, some report an improvement. The only shading on plates is by mills making the smaller sizes. Sheets are fairly firm and mills are getting a good volume of specifications on contracts. Some new contracts have been closed for delivery through the remainder of the year. The demand for iron bars is only moderate and prices are not firm. We quote iron bars at 1.35c., at mill. At a meeting of rivet manufacturers last week the present quotations on rivets of 1.90c., base, for structural, and 2c. for boiler rivets, were reaffirmed. These prices have been generally shaded for some time. The usual concessions are still being made for the remainder of the year, but makers announce their intention to take no orders for delivery after January 1 at less than the regular prices.

Old Material.—The demand continues very light for all grades. Mills are buying only in small lots as they need material, and these requirements are small, as some of the local mills still have good sized stocks on hand. Some producers are holding back their scrap for better prices and the belief is quite common among dealers that the railroads are not placing all of their tonnage on the market. Dealers appear to have no trouble in buying scrap at prices that permit them to make sales at ruling quotations and leave a fair margin of profit. No change is noted in prices. Dealers' prices per net ton, f.o.b. Cleveland, are as follows:

Old steel rails.....	\$14.00 to \$14.50
Old iron rails.....	16.00 to 16.50
Steel car axles.....	20.00 to 20.50
Heavy melting steel.....	13.00 to 13.25
Old car wheels.....	14.00 to 14.50
Relaying rails, 50 lb. and over.....	22.50 to 23.50
Agricultural malleable.....	12.00 to 12.50
Railroad malleable.....	13.00 to 13.50
Light bundled sheet scrap.....	9.00 to 9.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles.....	\$21.00 to \$21.50
Cast borings.....	5.50 to 6.00
Iron and steel turnings and drillings.....	6.25 to 6.50
Steel axle turnings.....	8.75 to 9.00
No. 1 busheling.....	11.00 to 11.50
No. 1 railroad wrought.....	13.00 to 13.50
No. 1 cast.....	11.50 to 12.00
Stove plate.....	10.50 to 11.00
Bundled tin scrap.....	11.00 to 11.50

The German Iron Market.

BERLIN, October 13, 1910.

Dealers south of the Rhine have raised the price of bars from stock by 5 marks, and the Rhenish-Westphalian group of foundries turning out commercial castings have voted an immediate advance of 2 marks per metric hundredweight, or 10 per cent. on the piece price. This exhausts the list of the week's price advances. From the Belgian market a Brussels dispatch of to-day's date reports a continuance of the reaction previously mentioned in this correspondence. The Belgian blast furnaces have had to curtail their output owing to overproduction and prices have this week further fallen 1 franc; a similar fall occurred in plates for export.

Germany's production of pig iron in September was 1,232,477 metric tons, against 1,262,804 tons in August and 1,068,346 tons in September, 1909. While the aggregate production last month was less than in August, the daily output of the furnaces made a further gain of 347 tons. It would appear probable, therefore, that October will establish a new record in production. The shipments of the Steel Works Union for September in rails, structural shapes and semimanufactured steel amounted to 449,082 tons, being 2493 tons more than in August and 10,178 tons more than in September, 1909. The shipments of steel for further manufacture were 19,078 tons more than in August, and more than for any other month since March. In this specialty the shipments are considerably in excess of the allotments, but the movement in rails and structural shapes is so much below the allotments that the total shortage in shipments for all three classes is nearly 13½ per cent.

A report upon conditions in the Upper Silesian iron district indicates that business is improving there. Consumers and dealers are showing a greater willingness to buy at the higher prices now ruling. This is particularly the case with bars.

Negotiations have been opened for the renewal of the combination controlling plates for shipbuilding, which expires at the end of the year. It is expected that the renewal will be adopted without serious difficulty, as the arrangement has been a satisfactory one for the mills concerned. The great lockout in the shipbuilding trade has ended at most of the yards and better trade in plates from that quarter should soon manifest itself.

Cincinnati

CINCINNATI, OHIO, October 26, 1910.—(By Telegraph.)

Pig Iron.—The week opens with a much better feeling generally entertained. Inquiries are more numerous, and while a large percentage of them may be simply feelers, the receipt of them shows much more interest on the part of prospective buyers. The small tonnage business for nearby delivery is improving and a few round lots of iron have also changed hands. One sale was made this week to a Western melter of 2400 tons of Southern No. 2 at \$11, Birmingham, for November-December shipment. Inquiries include 1500 tons of Northern and Southern No. 2 foundry, for a northern Ohio melter. A Northwestern manufacturer wants 2500 tons of various grades and will probably purchase Southern iron. An Eastern pipe maker has inquiries here for 2500 tons each of No. 3 foundry and gray forge. A nearby firm wants about 1000 tons of analysis iron and a local user is asking for 800 tons of foundry iron, all for first half delivery. Several fair-sized requests for quotations have also come in from the St. Louis district. Practically all the inquiries recently mentioned are still pending, but early action on some of them is expected. Southern No. 2 foundry, is quoted at \$11, Birmingham district, for November-December shipment and at \$11.50 for the first half of next year, but this last named figure is understood to have been shaded on a few contracts extending into the first quarter. Northern iron still hovers around \$14, Ironton, for this year, with an advance of 50c. per ton asked for first half of next, but first quarter contracts can be made with some interests at \$14.25. For immediate delivery and for the remainder of the year, based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton, we quote f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry.....	\$14.75 to \$15.25
Southern coke, No. 2 foundry.....	14.25 to 14.75
Southern coke, No. 3 foundry.....	13.75 to 14.25
Southern coke, No. 4 foundry.....	13.50 to 14.00
Southern coke, No. 1 soft.....	14.75 to 15.25
Southern coke, No. 2 soft.....	14.25 to 14.75
Southern gray forge.....	13.50 to 14.00
Ohio silvery, 8 per cent. silicon.....	19.20 to 19.70
Lake Superior coke, No. 1.....	16.20 to 16.70
Lake Superior coke, No. 2.....	15.70 to 16.20
Lake Superior coke, No. 3.....	15.20 to 15.70
Standard Southern car wheel.....	25.25 to 25.75
Lake Superior car wheel.....	22.25 to 22.75

(By Mail.)

Coke.—A few inquiries for small lots of foundry coke for first half delivery are being received, but actual business

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being booked is very light. In furnace coke there is practically nothing being done. Some low grade furnace coke for spot shipment is still to be obtained in all three fields around \$1.50 to \$1.55 per net ton, at oven. Contract prices range from \$1.65 to \$1.85. Standard brands of foundry coke can be bought for future delivery around \$2.15 to \$2.30, although some spot shipment foundry grades are obtainable at \$2, at oven.

Coal.—Both domestic and steam coal is firm, and the matter of prompt shipment on some grades is a vexing problem. Pocahontas lump is quoted at \$2.25, f.o.b. mines, but delivery cannot be promised under 30 days. Pocahontas nut is quoted at \$1.50, run-of-mines, \$1.25, and slack, 90c. to \$1, and prompt shipment can be made of any of these grades. Kentucky run-of-mine can be bought at \$1.25 and slack at 70c., all f.o.b. mines.

Finished Iron and Steel.—Little new business is being booked by the mill agencies, but the movement of carload lots on contract is reasonably good. Retail warehouse specifications are not coming in any faster than during the previous three weeks. The warehouse price on bars is 1.80c. and on structural material 1.90c.

Old Material.—The market continues very quiet. The railroads in this vicinity will not sell at prevailing figures and dealers show no inclination to offer more. A North-western railroad system is said to have sold a round tonnage of scrap last week, but local firms were not successful in getting any part of the lot. Prices for delivery in buyers' yards, Cincinnati and southern Ohio, are as follows:

No. 1 railroad wrought, net ton.....	\$12.50 to \$13.00
Cast borings, net ton.....	4.50 to 5.00
Steel turnings, net ton.....	6.00 to 7.00
No. 1 cast scrap, net ton.....	11.50 to 12.50
Burnt scrap, net ton.....	8.00 to 9.00
Old iron axles, net ton.....	17.50 to 18.50
Old iron rails, gross ton.....	14.50 to 15.00
Relaying rails, 50 lb. and up, gross ton.....	22.50 to 23.50
Old car wheels, gross ton.....	12.00 to 13.00
Heavy melting steel scrap, gross ton.....	12.00 to 12.50

Buffalo

BUFFALO, N. Y., October 25, 1910.

Pig Iron.—New business has been coming in quite freely during the past week or 10 days, the orders booked by Buffalo district furnaces aggregating 40,000 to 50,000 tons, covering No. 2 X, No. 2 plain, Nos. 3 and 4 foundry and malleable, for deliveries running through the current quarter and first quarter of 1911, and in some instances through first half. The bulk of the tonnage taken was of foundry grades, although there was a fair proportion of malleable; practically no basic was ordered, the inquiry for steel making iron being limited. Most of the 1911 business taken has been contracted for on what the furnaces consider an extremely low price basis, it being necessary to cut prices to the bone to meet Southern iron competition at tidewater. Undoubtedly a much larger tonnage could have been booked but for the fact that some furnace interests are not inclined to accept current schedule rates (which have been hammered to rock bottom) for extended 1911 deliveries. It is understood that the United States Radiator Company, which has been in the market for a large tonnage, has not yet placed contracts. Stove foundries are very busy, more so than two years past, and have placed orders in good volume. For deliveries over the remainder of the year and running through the first half of 1911 we quote as follows, f.o.b. Buffalo:

No. 1 X foundry.....	\$14.75 to \$15.25
No. 2 X foundry.....	14.25 to 14.75
No. 2 plain.....	14.00 to 14.25
No. 3 foundry.....	13.75 to 14.00
Gray forge.....	13.75 to 14.00
Malleable.....	14.25 to 14.75
Basic.....	14.25 to 14.75
Charcoal.....	18.00 to 18.50

Finished Iron and Steel.—The sentiment along general lines is better and the outlook continues to improve and a good volume of inquiry for current business is coming in. One of the leading interests reports more tonnage closed during the past two weeks than for the preceding six weeks. Steel bar prices are unchanged and firm at 1.40c. base, Pittsburgh. It is understood that the tonnage of bar material for which the Merchants' Despatch Transportation Company was in the market for its East Rochester shops, between 400 and 500 tons, was placed for iron bars at less than 1.40c. The Solvay Process Company, Syracuse, has placed an order for 275 tons of reinforcing bars for its new buildings. There has been active buying of wire nails during the past 30 days and it now develops that most of the tonnage has been placed with two of the older and larger independent wire nail interests. It is understood that a price which would net 5c. per keg under the current price of \$1.70 was made on this tonnage. An order has been placed during the week by one of the larger Canadian manufacturers for

1000 tons of tin plate, delivery to be made during the next three months, the order being taken by the New York office of the United States Steel Products Company. There appears to be considerable activity in the demand in this branch of production as there are a number of other inquiries in the market and owing to the rapid advance in price of pig tin and the fear that it is going to be further advanced, tin plate users are taking active steps to cover their requirements for the forepart of next year. The local office of the leading interest reports an additional contract tonnage for bar material has been closed during the week for Canadian export and that business in all lines is coming forward in good volume from the Canadian market. In structural lines the amount of new business developing has been small. Plans are to be out shortly for a warehouse and store building for the H. D. Taylor Company, Buffalo, requiring about 100 tons of steel, and the Electrode Company of America is arranging to build a manufacturing plant at Niagara Falls which will take about 100 tons. The plans for the Haberstro Estate's store and loft building, Buffalo, are being revised and will be refigured. The contract for the steel work in the Y. M. C. A. Building, Erie, Pa., about 275 tons, was taken by the T. H. Brooks Company, Cleveland. The structural steel for the International Harvester Company's buildings at Auburn, N. Y., about 500 tons, was placed with the Eastern Steel Company.

Old Material.—The market is quiet, with no material change in conditions or prices. Deliveries on contracts are being taken by consumers, but very little new business is developing, such as there is being of the hand-to-mouth character. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel.....	\$12.00 to \$12.50
Low phosphorus steel.....	17.00 to 17.50
No. 1 railroad wrought.....	14.00 to 14.50
No. 1 railroad and machinery cast scrap..	13.25 to 13.50
Old steel axles.....	17.50 to 18.00
Old iron axles.....	23.00 to 23.50
Old car wheels.....	13.75 to 14.25
Railroad malleable.....	13.00 to 13.25
Boller plate.....	10.00 to 10.50
Locomotive grate bars.....	10.50 to 11.00
Pipe.....	10.50 to 11.00
Wrought iron and soft steel turnings..	6.75 to 7.00
Clean cast borings.....	6.25 to 6.50
No. 1 busheling scrap.....	11.25 to 12.00

New York

NEW YORK, October 26, 1910.

Pig Iron.—Business keeps up at a fair rate, with prices slightly lower. Four or five considerable users of pig iron have been inquiring for iron for delivery in the first two or three months of 1911. Where business is closed it is done quietly and information concerning the size of transactions and prices is not available in a number of cases. Pipe makers have been buying, as has been the case nearly every week this fall. One eastern Pennsylvania pipe foundry is inquiring for 5000 tons for January and February. Last month it bought from 6000 to 7000 tons. Business is being done with a variety of foundries, including electrical and railroad equipment manufacturers. There is also further buying for radiator works. Some inquiry is reported from New England machinery foundries, and in that section some Virginia iron has been placed. The basis was \$13, at furnace, for No. 2 X, this representing a higher delivered price than has ruled for iron from other districts. The premium was paid because a certain percentage of Virginia iron was desired for the mixture. Shipments on contracts are, as a rule, satisfactory to producers, and the foundry trade is evidently in fair shape. Complaints of decreasing demand for castings are heard, but they are not general. Buyers of pig iron have been coming into the market in groups from time to time and thus the demand is distributed in a way that turns out to the buyers' advantage. There has been all along an absence of any large amount of simultaneous inquiry from all directions, which is the sort of inquiry on which markets advance or at least stiffen up. Quotations for tidewater deliveries are as follows: Northern No. 1 foundry, \$15.75 to \$16; No. 2 X, \$15.25 to \$15.75; No. 2 plain, \$15.25 to \$15.50; Southern No. 1 foundry, \$15.50 to \$16; No. 2, \$15.25 to \$15.50.

Finished Iron and Steel.—In spite of some expectations to the contrary, the railroads are not likely to become an important buying factor in the immediate future, and the building season is drawing to a close. Altogether there is little prospect of much increased activity in finished iron and steel for two months at least. Last week was particularly quiet in most lines, but the bar iron trade reports some increase in tonnage. Structural material orders have been very scarce and interest has been lost in the New York Subway for some months to come, as the bids on city construction closing this week cannot bring out inquiries for steel for a good while. Prices generally continue firm, however, and

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will probably remain so. Milliken Bros. obtained the contract for the extension to the Knickerbocker Trust Company Building, New York, 1600 tons. Contract for the steel for the Washington Irving High School, 2500 tons, has not yet been placed. The Long Island Railroad work, to require from 6000 to 12,000 tons, has gone to the Fort Pitt Bridge Company, and the latter is also reported to have the Jamaica bridge, 400 tons. In the West there are inquiries for two buildings, each requiring about 800 tons, one for the Knights of Columbus in San Francisco, and one, a hotel, at French Lick Springs. The Belmont Iron Works has taken 450 tons for an apartment building at Atlantic City, and the Phoenix Bridge Company, 240 tons for turntables for the Pennsylvania Railroad. No award has been made on the 800 tons for the Fowler Estate Building in Detroit. Quotations continue as follows: Plain structural material, plates and steel bars, 1.56c. to 1.61c., and bar iron, 1.45c. to 1.50c.

Cast Iron Pipe.—The city of New York will open bids November 2 on 3500 tons of pipe of various sizes to be purchased directly from manufacturers, the pipe being intended for the city supply and not for any specific contract job. Pipe manufacturers are now receiving frequent orders for small quantities. Some orders call for several hundred tons, but they are usually for much smaller quantities. The demand for next year is becoming still more pronounced. Fairly large inquiries are being received, some of which call for delivery through the first half and even as far as October. Buyers, however, are endeavoring to place such contracts at present prices. The foundries show a strong disinclination to sell on this level for distant delivery. Carload lots of 6-in. continue to be quoted at \$22.50 to \$23.50 per net ton, tidewater.

Old Material.—The demand is better for the general list, especially for heavy melting steel scrap, of which sales of 25,000 to 30,000 tons are reported. Old car wheels, which have long been neglected, are receiving more attention, but holders are not parting with them to any considerable extent, being confident that considerably higher prices may be realized. Cast scrap is moving a little more freely. A sale of 1000 tons of Panama scrap was made last Thursday at \$9.36, f.o.b. cars, Hoboken. Other bids on this scrap were \$8.01, \$8.71, \$9.11 and \$9.35. Dealers' quotations, per gross ton, New York and vicinity, are as follows:

Re-rolling rails.....	\$13.00 to \$13.25
Old girder and T rails for melting.....	12.00 to 12.25
Heavy melting steel scrap.....	12.00 to 12.25
Relaying rails.....	20.50 to 21.50
Standard hammered iron car axles.....	22.50 to 23.00
Old steel car axles.....	17.50 to 18.00
No. 1 railroad wrought.....	14.50 to 15.00
Wrought iron track scrap.....	13.00 to 13.50
No. 1 yard wrought, long.....	13.00 to 13.50
No. 1 yard wrought, short.....	12.00 to 12.50
Light iron.....	5.50 to 6.00
Cast borings.....	7.00 to 7.50
Wrought turnings.....	7.00 to 7.50
Wrought pipe.....	11.00 to 11.50
Old car wheels.....	12.50 to 13.00
No. 1 heavy cast, broken up.....	13.00 to 13.50
Stove plate.....	10.00 to 10.50
Locomotive grate bars.....	9.50 to 10.00
Malleable cast.....	12.50 to 13.00

Metal Market

NEW YORK, October 26, 1910.

THE WEEK'S PRICES

Cents Per Pound.

	Copper.			Lead.			Spelter.	
	Lake.	Electro-lytic.		New York.	St. Louis.		New York.	St. Louis.
Oct. 20.....	12.87½	12.80	37.35	4.40	4.27½	5.60	5.45	5.45
21.....	12.87½	12.80	36.90	4.40	4.27½	5.60	5.45	5.45
22.....	12.87½	12.80	36.15	4.40	4.27½	5.60	5.45	5.45
23.....	12.87½	12.80	35.75	4.40	4.28½	5.60	5.45	5.45
24.....	12.87½	12.80	36.15	4.40	4.27½	5.60	5.45	5.45
25.....	12.87½	12.80	36.15	4.40	4.27½	5.60	5.45	5.45

Pig tin is lower, but stocks are not any too plentiful. Copper is strong and selling well. The lead market is slightly firmer. Spelter continues quiet, but prices are being upheld.

Copper.—The buying movement continues and the market is steadily strengthening as a result. It would be hard to make an estimate of the amount of copper that has been bought within the last two weeks, as most of the large selling interests are reticent about stating just how much business they have done. It is generally conceded that newspaper reports have been greatly exaggerated, a conservative estimate being about 100,000,000 lb. Both buyers and sellers are taking a safe and sane stand, as no attempt has been made to push prices beyond a normal figure. Electrolytic copper can still be had at around 12.80c., and this price might even be shaded by some sellers. Lake is selling at 12.87½c. Copper consumption abroad is especially good, as can be judged from the following report of Henry R. Merton & Co., Ltd., of London: "There is no abatement in the demand for refined copper, which remains abnormally large

and regular, and testifies to the continuance of the excellent consumption in Europe. Large orders have again been distributed for manufactured copper of all descriptions, and the requirements of sulphate makers are also considerable, promising heavy deliveries of copper from English warehouses during the next few months." The London market closed to-day with spot copper selling at £51 1s. 3d. and futures selling at £58 2s. 6d. The sales amounted to 450 tons of spot and 750 tons of futures.

Pig Tin.—Prices have eased up, but this does not mean that the people in control of the situation have let go. It is said here that the speculators in London, who have been sending the market up to record figures, have decided that it would be a good policy to lower quotations somewhat. The arrival of the steamer Minnewaska on Saturday with 1300 tons of tin slightly relieved the tension here, but there was such a decidedly good consuming demand that most of the cargo was called for before the steamer was unloaded. The market here now is in such a state that even the dealers are timid and all the business that has been done during the last week was buying by consumers who were in actual need of the metal. The market took an upward turn this afternoon and sales were made in New York at 36.15c., and consumers showed considerable anxiety to buy. The London market closed with spot tin selling at £164 10s. and futures selling at £164 7s. 6d. Sales amounted to 270 tons of spot and 520 tons of futures. The market was strong.

Tin Plates.—The market continues quiet and there is talk in the trade of possible lower prices. The high price of pig tin, however, would seem to discourage any movement in that direction. The price for 100-lb. coke plates is \$3.84.

Lead.—Lead is firmer, and a good demand has developed. Large contractors are the principal buyers. It is evident that a great deal of outdoor contracting has been done during the last few weeks because of the open weather. The St. Louis market is firmer than it has been in some weeks and sellers there are asking 4.27½c. The leading interest seems to control the situation here by holding the metal at 4.40c., while outside interests are quoting up to 4.45c.

Spelter.—Buyers are taking spelter only as they need it, but sellers are holding the price decidedly firm at 5.60c. If any buying movement develops it is probable that the price will be advanced.

Antimony.—Antimony is very quiet. Cookson's is selling at 8.15c., Hallett's at 7.75c. and Chinese brands are being offered at 7.40c. to 7.50c., while Hungarian grades can be had as low as 7.12½c.

Old Metals.—The market is much stronger. Dealers' selling prices are as follows:

	Cents.
Copper, heavy cut and crucible.....	12.50 to 12.75
Copper, heavy and wire.....	11.75 to 12.00
Copper, light and bottoms.....	11.00 to 11.25
Brass, heavy.....	8.25 to 8.50
Brass, light.....	7.00 to 7.25
Heavy machine composition.....	11.25 to 11.50
Clean brass turnings.....	8.00 to 8.25
Composition turnings.....	9.00 to 9.50
Lead, heavy.....	4.20 to 4.25
Lead, tea.....	3.95 to 4.00
Zinc scrap.....	4.30 to 4.40

Metals, Chicago, October 25.—The liberal buying of copper by large consumers and other conditions in the trade have made the market firm at the prices quoted last week. Tin continues very erratic. Lead is reported a little firmer at East St. Louis without any change in the Chicago market. Spelter is advancing; close observers of the market express the opinion that the price is being manipulated, as reports of actual production do not confirm the rumors of decreased output. The spread between spelter and lead is considered abnormal, as an indication that the advance is not due wholly to consumptive demand. We quote Chicago prices as follows: Casting copper, 12½c.; lake, 13½c., in carloads, for prompt shipment; small lots, ¼c. to ½c., higher; pig tin, carloads, 37c.; small lots, 39c.; lead, desilverized, 4.35c. to 4.40c., for 50-ton lots; corroding, 4.60c. to 4.65c., for 50-ton lots; in carloads, 2½c. per 100 lb., higher; spelter, 5.60c. to 5.65c.; Cookson's antimony, 10½c., and other grades, 9c. to 10c., in small lots; sheet zinc is \$7.50, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 12½c.; copper bottoms, 10½c.; copper clips, 12c.; red brass, 11½c.; yellow brass, 9c.; light brass, 6c.; lead pipe, 4¼c.; zinc, 4¼c.; pewter No. 1, 25½c.; tin foil, 30c.; block tin pipe, 33c.

Metals, St. Louis, October 24.—Lead is firm at 4.25c.; spelter is strong and higher at 5.50c. to 5.60c., both East St. Louis. Zinc ore is excited and higher, being quoted at \$43 to \$44 per ton, Joplin base. Tin is quoted at \$7.85c. per pound; antimony (Cookson's), 8.50c.; lake copper,

13.35c.; electrolytic, 13.32½c., all at St. Louis. The demand for finished metals showed some improvement over the previous week, though business for this month is not equal to September. Some increase in railroad buying is noted.

Iron and Industrial Stocks

NEW YORK, October 26, 1910.

The stock market maintained its strength and iron and industrial stocks steadily advanced until Monday, when some setback occurred. A notable exception to the general advance was Sloss-Sheffield common, which experienced a sharp decline. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com.. 10 - 10½	Pressed St., pref.. 95½- 96
Allis-Chalm., pref.. 33 - 33½	Railway Spr., com. 35 - 37
Beth. Steel, com... 29½- 34½	Republic, com.... 33½- 35½
Beth. Steel, pref... 60½- 64½	Republic, pref.... 96½- 97½
Can. com..... 9 - 9½	Sloss, com..... 50½- 57½
Can. pref..... 70 - 74½	Pipe, com..... 17 - 18½
Car & Fdry, com.. 52½- 55½	Pipe, pref..... 55½- 57½
Car & Fdry, pref... 115 - 117	U. S. Steel, com... 75½- 79½
Steel Foundries... 45½- 49½	U. S. Steel, pref... 119 - 120½
Colorado Fuel... 33½- 35½	Westinghouse Elec. 71 - 75½
General Electric... 154 - 156½	Va. I. C. & C.... 54 - 55
Gr. S. ore cert... 58½- 61½	Am. Ship, com... 78½- 79½
Int. Harv., com... 108½- 114½	Am. Ship, pref... 108½- 110
Int. Harv., pref... 123½- 124½	Chi. Pneu. Tool... 40½- 42
Int. Pump, com... 43½- 44½	Cambria Steel.... 43½- 45
Int. Pump, pref... 84 - 84½	Lake Sup. Corp... 23½- 25½
Locomotive, com.. 40 - 42	Pa. Steel, pref... 106½- 110
Locomotive, pref... 106 - 108	Warwick..... 11 - 11½
Nat. En. & St., com. 17½- 18	Crucible St., com.. 12½- 13½
Nat. En. & St., pref. 60½- 62½	Crucible St., pref.. 78½- 80½
Pressed St., com.. 34½- 35½	Harb.-W. Ref., com..... 32

* Ex dividend.

Dividends.—The Warwick Iron & Steel Company has declared a semiannual dividend of 4 per cent., an increase of 1 per cent. over the last declaration, payable November 15. The policy of the company heretofore has been to place all its surplus earnings over and above 6 per cent. per annum into a fund for operating expenses, which policy was adopted until a fixed amount had been set aside. This now having been done it was decided to increase the dividend.

The Cambria Steel Company has declared the regular quarterly dividend of 1¼ per cent., payable November 15.

The American Steel Foundries has declared 1¼ per cent. regular quarterly dividend, payable November 15.

The United States Steel Corporation has declared the regular quarterly dividends of 1¼ per cent. on the preferred stock, payable November 29, and 1¼ per cent. on the common stock, payable December 30.

The Attorney General of the United States has announced that he will not make any report on the United States Steel Corporation under the Stanley resolution until the Supreme Court has decided the Standard Oil and American Tobacco cases in which the validity of the laws affecting large corporations is involved. He states that after receiving the court's instruction of the laws he can make a definite and intelligent report on the questions raised.

The Canton Sheet Steel Company, which began the construction of a rolling mill at Canton, Ohio, in May, 1910, expects to have the works completed and ready for operation in November. The plant is being equipped with six sheet, six pair, and six annealing furnaces, five 38-in. hot and one 44-in. and four 24-in. cold trains of rolls, and three shears. It will have an annual capacity of about 20,000 tons of black and galvanized sheets.

The recent annual dinner of the Comité des Forges de France, Paris, was made the occasion of paying a tribute to Pierre Martin, one of the pioneers in the introduction of the open hearth steel furnace. It had been ascertained that M. Martin was in straitened circumstances, and an international subscription was started, the total contributions amounting to over £8,000.

The Bethlehem Steel Company, South Bethlehem, Pa., states that no definite plans have yet been made in regard to extensions or improvements in 1911. Reports have been in circulation that the company would expend \$5,000,000 in new construction next year, including blast furnaces, coke ovens, &c.

The Desirability of Uniform Statutes Affecting Corporations

An address on the timely subject of uniform Statutes affecting corporations was delivered by A. Parker Nevin, general counsel of the National Association of Manufacturers at the annual convention of the American Hardware Association, at Atlantic City, on October 19. Mr. Nevin stated that the fact that over 400,000 corporations had been organized in America was conclusive proof of the permanency of the corporation as the normal vehicle for American business enterprises. He laid stress on the fact that the regulation of the ordinary business corporation was purely a State right, and that the difference in the statutes affecting corporations arose from the State policy on this subject, which was entirely within their inherent rights.

The value of Federal charters, he said, was somewhat overestimated, as it would not obviate many of the objections claimed. The dissimilarities and general chaos among the States, with respect to their statutes regulating the incorporation and organization of business companies, was a curious comment on our jurisprudence. The most sensible, direct and practical method to overcome the disadvantages of conflicting statutes was to secure a uniform statute for the States to adopt as soon as possible.

He paid high compliment to the work of the Uniform State Law Commissioners, who now have a draft for a uniform incorporation act under preparation. He added that the National Association of Manufacturers has a standing Committee on Uniform State Law, which is acting in cordial co-operation with the commissioners, and has rendered them great assistance in their work of constructive State legislation along uniform lines.

The E. W. Bliss Company, Brooklyn, N. Y., has received at the Brussels Exhibition the highest awards and grand prize, thus denoting the high standard of its machinery. The company's exhibit was a large one, as will be observed by referring to the description published in *The Iron Age* of August 18.

The Chilean Government has decided to postpone until December 30 the time for the opening of bids for the construction of two battleships of 24,000 tons. American and German shipbuilding interests had requested the postponement from October 30, the date set for the opening of tenders.

O. A. Blackburn, vice-president of the Sharon Steel Hoop Company, Sharon, Pa., has sold his stock to Frank H. Buhl and others of Sharon, Pa., and will retire from the company November 1. He has made some plans for future business connections, but these are not ready to be announced.

Practically the entire corporation tax, for the year, exceeding \$27,000,000, has been collected by the United States Treasury Department. The officials declare that it was collected with less annoyance and was paid apparently with less reluctance than any other internal revenue tax imposed.

About 1500 boilermakers in the Pittsburgh district who have been on a strike since August 1 have returned to work. The inside boilermakers have been given an advance of about 5 per cent. in wages and the outside men 10 per cent.

Orders have been placed by the Jones & Laughlin Steel Company with the Cutler-Hammer Electric Company, Milwaukee, Wis., for two 50-in. lifting magnets to be installed at the Aliquippa plant.

The Machinery Markets

The convention of the National Machine Tool Builders' Association, now in session in New York, is attracting much attention in the machinery trade. Persons interested in all classes of machinery equipment are in attendance, with a view to getting a line on the machinery outlook. The machine tool men in general report a very good business, and manufacturers of automatic equipment, as well as makers of lathes and planers, are as a rule behind in their orders. It is the consensus of opinion among machinery men in attendance that a good winter's business is in sight, and most of those whose shops are up to date, as far as deliveries are concerned, declare that they are making machines for stock with a view to a good future business. In the general trade the railroads are becoming more active. The Baltimore & Ohio Railroad is out for a fair sized list of machinery, and a large order has been placed by the Missouri Pacific Railroad. There is renewed activity in the trade in Detroit and a steady influx of orders, especially for gear cutting machinery, and automatic screw machinery is coming into that market. The Chicago market has been enlivened by railroad buying, and a list from the Wabash Railroad is out in St. Louis. There is increased activity in the South and in the Northwest. In the latter territory power plant equipment is in especially good demand. A single tool business is being done in Philadelphia and Cleveland, but there are good inquiries in both those markets. Reports from Cincinnati show that the outlook is becoming brighter there, and dealers in railroad supplies are stocking up in anticipation of a good buying movement. The export business is especially good.

New York

NEW YORK, October 26, 1910.

Business in the New York machinery market is only fairly good. One large New York machine tool house booked an order for an extensive line of machine tools for the Missouri Pacific Railroad, but beyond that there has been very little buying. Inquiries that have been made in this market during the last four weeks, which should result in buying, have not materialized as far as orders are concerned. It is a noticeable fact that many of those inquiring for small lots of new tools have compromised by purchasing second-hand equipment. If only a small proportion of the inquiries now before the trade result in business some good buying should ensue within the next two weeks, but most dealers are somewhat doubtful as to the intention of the inquiries. The fact that there is such a good volume of inquiries and such a small volume of business is taken to indicate that manufacturers in general are holding off because of the tightness of the money market. They seem willing enough to buy and their inquiries indicate that they need equipment, but they are timid about spending the money. Machinery dealers in general are also a little wary about extending credit. On the whole, if manufacturers would take a more optimistic view of the business situation there is no doubt that a good buying movement would result. This condition is not true in all branches of the machinery trade, as there are some lines in which manufacturers are especially busy. Dealers in electric motors and small power plants have enough to do while the market in heavy power equipment is being neglected. Manufacturers of cranes are reporting a lull in business, but, on the other hand, manufacturers of coal handling equipment and contractors' machinery, such as hoisting engines, dredges and the like, are as busy as they have been at any time this year. This "spotty" condition of trade makes it hard to sum up the real situation.

The affairs of the Commercial Iron Works of Penn Yan, N. Y., whose plant on Lake street was destroyed by fire several months ago, with the exception of the molding room, are being reorganized and the plant will be rebuilt. A new company has been formed and will be incorporated at once with a capital stock of \$30,000, under the name of the Commercial Iron Works Company. Among the directors are Wm. M. Patterson, Wm. N. Wise and Wm. T. Morris.

The Augustine Automatic Rotary Engine Company, Buffalo, N. Y., is having plans prepared for extensive additions to its plant at Elmwood avenue and the Erie Railroad. Two buildings will be erected at once—a power house, 50 x 50 ft., two stories, and a factory wing, 35 x 100 ft., three stories, and in the near future two other factory buildings, 35 x 250 and 35 x 350 ft., three stories, will be built; construction, reinforced concrete; cost, approximating \$100,000.

The Geo. A. Otis Company, 818 Main street, Buffalo, N. Y., manufacturer of beds, will build a two-story brick factory at Florida and Jefferson streets.

The Globe Elevator Company, Buffalo, N. Y., whose grain elevator at Niagara and Wayne streets and the Michi-

gan Central Railroad was completely destroyed by fire recently, will build and equip a new elevator and mill on the Erie Railroad, extending from Kentucky street to Tennessee street. Entire equipment of new elevating and milling machinery will be required. Millard P. Ryley is president. General offices, 722-723 Chamber of Commerce Building.

The Loeser Bros. Company, 330 Howard street, Buffalo, N. Y., dealer in scrap materials, will erect a two-story and basement warehouse, 82 x 97 ft., at Depew, N. Y., with New York Central Railroad switch connections. Some equipment will be installed in the way of presses, baling machinery, elevators, &c.

Plans are being prepared by State Engineer Frank M. Williams, Albany, N. Y., for a steel bridge to be constructed over the Erie Canal at South Washington street, Rome, N. Y.

The Frisbie-Stansfield Knitting Company, Utica, N. Y., will erect a four-story and basement factory, 54 x 154 ft., with power house 35 x 45 ft., on a site recently purchased at South and St. Vincent streets, that city.

The Atlas Works of the Standard Oil Company, Buffalo, N. Y., is adding a one-story brick flange shop to its plant on Elk and Babcock streets and the Buffalo Creek Railroad.

The New York Construction Company, 1328 Broadway, New York City, were low bidders, at \$11,524, for the electric work and feeder cable for the power house equipment for the New York State Training School for Girls at Hudson, N. Y.

The Seneca Power Company, Baldwinsville, N. Y., will erect and equip a power house 50 x 80 ft., one story, of brick construction.

The city of Rochester, N. Y., is having plans and specifications prepared for a refuse incineration plant, the erection of which is contemplated in the near future.

The Bingham Trunk Company, Buffalo, N. Y., is building a two-story factory and warehouse adjoining its present location at Mechanic and Baker streets.

The Iroquois Brewing Company, Buffalo, N. Y., is building a \$150,000 addition to its plant on Pratt street for stock-house and bottling works. Considerable new equipment will be required.

The business of the Fillmore Avenue Foundry & Iron Works is increasing so rapidly that further facilities in buildings and equipment are to be provided at once, in addition to the building improvements completed this summer. Lyman P. Hubbell, president, Fillmore avenue and Pennsylvania Railroad.

The J. W. Storandt Mfg. Company, now located at 322 St. Paul street, Rochester, N. Y., has purchased a site on Lyell avenue, on which it will erect a factory for the manufacture of showcases.

Plans have been completed for the building of a power plant on Budd's Pond for Wm. C. Geer of Troy, N. Y., to furnish power for the operation of the plants of the Troy Knitting Company and the Albia Box & Paper Company, both of which are located on Pawling avenue. A 42-in. steel flume will be constructed.

The Aluminum Casting Company is adding to its foundry plant at Elmwood and Hertel avenues and the Erie Railroad, a power house and heating building, brick and concrete construction.

THE MACHINERY MARKETS

Chicago

CHICAGO, ILL., October 25, 1910.

The machinery market has been quiet the past week. There is a fair amount of current business, especially in second-hand tools, and some of the houses which handle special lines have done better than the average. There are signs of more activity among the railroads. Several small lots of tools have been purchased recently by large railroad systems and dealers have hopes of a buying movement in this quarter that will add considerable strength to the market.

There is more or less complaint of collections being slow in the machinery trade. Where sales have been made on 30 or 60 days' time, buyers are often taking a month or two longer. A slight change in conditions in this respect makes a great difference in the finances of the machinery dealer as he operates on a small margin of profit and machine tools run into large amounts of money. If the buyers who want additional time would give notes the situation would adjust itself, as the dealer would have no difficulty in discounting good paper of this character at his bank. The best class of buyers, however, are reluctant to give notes, and it is a delicate matter for the dealer to crowd them, especially when they are regular customers. Hopes are expressed in the Chicago trade that the manufacturers at their annual convention may be able to make substantial progress on the question of credits in the machinery trade.

The Atchison, Topeka & Santa Fé Railway has recently purchased a small lot of tools, amounting to about \$15,000, without sending out a general list to the trade.

The Lake Shore & Michigan Southern is reported to have made an initial purchase of about \$25,000 worth of tools for the new Elkhart shops, but Chicago houses were not given an opportunity to figure on the business, which was closed at Cleveland.

The Baltimore & Ohio is in the market for a small list of tools amounting to \$10,000 to \$15,000.

The Pennsylvania Railroad, which issued a large list last summer covering tools wanted for various shops on the system, apparently has never closed for the entire list, having made only a few small purchases of equipment that was urgently required.

Reports that the Missouri Pacific has closed on the large list issued by that company some time ago are in line with expectations of greater activity among the railroads, but it does not appear that the bids of Chicago dealers have been accepted on the Missouri Pacific list.

The branch office of the H. A. Stocker Machinery Company in Milwaukee has been opened in the Merrill Building, in that city. It was announced some time ago in this correspondence that this company would open a Milwaukee branch, in charge of Robert C. Tate.

The Bishop-Eberle Mfg. Company, St. Louis, Mo., manufacturer of Security steel furnaces, sheet iron air tight heaters, tinware and metal specialties, has recently completed at New Athens, Ill., a new factory building 60 x 120 ft., for which the entire equipment has been purchased.

Voltz Brothers, Chicago, manufacturers of carriages, have plans prepared for a two-story factory building, 50 x 103 ft., to be erected on Forquer street, near Halstead street.

The Goss Printing Press Company, Chicago, has plans prepared for the erection of a two-story addition, 64 x 208 ft., to its plant at Fifteenth street and Ashland avenue.

The La Crosse Hay Tool Company, Chicago Heights, Ill., advises that its recent increase in capital stock from \$100,000 to \$200,000 was not made for the purpose of making improvements immediately.

The Wilson Machine Company, Des Moines, Ill., has purchased the plant of the Crescent Furnace & Foundry Company of that city, which it will incorporate under the title of the Wilson Foundry Company, with a \$10,000 capital stock.

The National Lock Company, Rockford, Ill., advises that its recent increase of capital stock from \$150,000 to \$250,000 was for the purpose of extra working capital.

The Clinton Gas & Electric Company, Clinton, Ill., is erecting a new addition to its engine room 45 x 72 ft., which will be equipped, when completed, with two new Murray-Corliss 400-hp. engines, direct connected to two 3-phase, 60-cycle, 1100-volt generators, with 200-kw. capacity. A new switchboard will also be installed. In addition to this the company is erecting a new smokestack of reinforced concrete construction, 131 ft., with a 9-ft. base and a 7-ft. top. The company has recently installed two new Sterling boilers, and two more will be installed early in the spring, replacing the old boilers now in use.

The Marseilles Mfg. Company, Marseilles, Ill., has increased its capital stock from \$250,000 to \$750,000 and will hereafter be known as the Marseilles Company. The company has moved its general offices and works to its new plant at East Moline, Ill., which is now in operation. It represents an investment of more than \$500,000 and is

equipped in every detail with every possible modern appliance for rapid, accurate and economical manufacture. In addition to other agricultural machinery it will manufacture the Success manure spreader.

Philadelphia

PHILADELPHIA, PA., October 25, 1910.

Merchants report a somewhat better volume of business. While there has been no important fresh demand, they have been successful in closing up some of the propositions which have been pending for some time. Transactions have been of the single tool character and cover a pretty fair range of the usual standard tools, generally in medium sizes. Milling machines have probably had the more extensive sale, both for early and near future delivery. From the manufacturers' standpoint the market shows but little change; the demand is still scattered and while plants continue to be operated on an even basis, stocks of tools are increasing and in instances a more pronounced effort to market some lines is noted. As far as inquiries are concerned, very little betterment is reported; in few instances quotations for certain equipment are being quietly asked, but there is little of importance on which prices have openly been requested. Immediate business on the part of the railroads is still dull, although a more hopeful feeling in reference to the railroad situation is to be noted. If the expected buying movement in the near future on the part of the railroads develops, it is believed that it will extend to requirements in the way of machine tools and shop equipment, while more active conditions in the iron and steel trade generally would result in a better demand for tools on the part of industrial establishments generally.

Manufacturers of special tools report a fair inquiry with moderate resulting orders, which come out irregularly, however, and, while better than last month, are still below the average. Export business is still very light.

The demand for second-hand tools, machinery, boilers and engines continues to drag. Sales are irregular and confined to no particular line. That for second-hand engines is the least active. Manufacturers of the larger power equipment have a fair amount of inquiry pending, but report that it is difficult to close.

Very little change is to be noted in the foundry trade. The demand for machinery castings is light, although a moderate amount of general and municipal work is pending. Steel casting plants report conditions unchanged, with little inquiry of an important nature.

The Bethlehem Steel Company, Bethlehem, Pa., has, it is reported, awarded a contract for the erection of an addition to its projectile plant to H. E. Havens, of this city.

The National Water Power Company has been chartered under the laws of the State of Delaware, with a capital of \$500,000, to construct windmills, waterwheels and motors of various descriptions. The incorporators are Walter H. Fieroe, John W. Fieroe and M. Beyer of Atlantic City, N. J., and H. W. Davis of Wilmington, Del.

Revised plans for the proposed addition to the Union League have been prepared and estimates for the construction are now being taken. The addition will be eight stories, 100 x 113 ft., of steel and stone construction, conforming with the addition recently completed.

Operations on demolition of a number of dwellings at Twelfth and Wood streets have been started to provide for the erection of a large commercial building to be built on the site, which measures 72 x 200 ft., for the Smaltz-Goodwin Company. The John Bird Company has the contract.

The Department of Docks, Wharves & Ferries, city of Philadelphia, contemplates the purchase of an additional ice boat for harbor service. City Councils have approved the department's budget for next year, including \$250,000 for a new ice boat, to replace one of the older type now in service.

The Reading Steam Heat & Power Company, Reading, Pa., has made a number of improvements to its plant during the summer months. Its service line in that city has been extended and a number of automatic stokers and other facilities added to its plant.

The Temple Iron & Steel Company has been incorporated under the laws of the State of Delaware, with a capital stock of \$500,000, to manufacture iron and steel. The incorporators named are Alfred J. Gemmer, W. H. Fleming and W. M. Davis, Philadelphia, Pa. Particulars regarding this company are not available at this time.

Plans have been outlined for the abolishment of a large number of grade crossings in the southern section of the city, and are now under consideration by the Pennsylvania and Baltimore & Ohio Railroads and city officials. They in-

THE MACHINERY MARKETS

clude the elevation of the tracks of the former company's road on Washington avenue west of Broad street; the extension of the Belt Line along the Delaware and Schuylkill rivers, and the elevation of a number of the branch roads in the lower section of the city, which have been a detriment to the growth of that section. An ordinance covering a large amount of the proposed work is in the course of preparation and will later be presented to city councils for action.

Dienelt & Eisenhardt, Inc., is very busy in all departments. Recent orders for some of its specialties have been numerous, including among others orders for 24 special bag machines, 4 special dead stroke hammers and a large Lovekin pipe expanding machine for Detroit, Mich., parties. Owing to the inactivity of the railroads the demand for hydraulic jacks is reported light. Shipments against orders go forward steadily. This concern has recently purchased additional machine tool equipment and has sufficient business on its books to keep the plant actively engaged for many months.

The Eastern Light & Fuel Company is taking proposals for the erection of a building, 70 x 111 ft., two stories, to be erected at Glassboro, N. J., for use as a gas manufacturing plant. This plant will be used as a central producing station for its extensive system in South New Jersey, embracing service to 27 towns. It will have a productive capacity of 1,200,000 cu. ft. of gas per day, working under the high-pressure system. A gas holder of 1,000,000 cu. ft. capacity, is in course of erection. Its general requirements in the way of equipment have been provided, although additional needs are anticipated in some directions.

The Standard Pressed Steel Company reports a large number of orders, but as a rule they are small individually, customers buying from hand to mouth rather than carry any material stock. There has been a very good demand for export trade in pressed steel shaft hangers and good orders from Holland, Sweden, France, Australia and South America are to be noted. The demand for countershaft hangers is easier. All departments of this concern's plant are being operated at full capacity with considerable business ahead.

To provide for expansion in its operations the Schade Valve Mfg. Company, now located at 56-58 North Second street, Philadelphia, Pa., has increased its capital stock. After alterations are completed the company will move to its new property at American, above Cumberland street, which it recently acquired. With the increased shipping and storage facilities the company will be in a better position to handle its growing business.

New England

BOSTON, MASS., October 25, 1910.

Manufacturers of heavy machinery state that inquiries received during the week indicate an increased interest on the part of the railroads, and the expectation is that they will be much more conspicuous in the market in the immediate future. The Boston dealers have experienced no change in conditions. The business transacted has been for small lots and single tools. The boiler manufacturers report a market having little business in sight, but qualify the statement by the reminder that the same condition existed a year ago this time, which was soon followed by a season of exceptional activity. The consensus of opinion among the machinery people, and those of allied industries, is that improvement is to be expected from now on. The difference of estimate is as to the degree of improvement.

The Hendey Machine Company, Torrington, Conn., is building a new erecting shop, 100 x 160 ft., one story, with saw tooth roof, and a storehouse, 60 x 120 ft., four stories. The company is now employing close to 700 men. With these buildings over 220,000 sq. ft. of floor space has been added in a little more than 10 years.

The wire industry of Worcester, Mass., is prosperous. The plants of the American Steel & Wire Company are operating at about 80 per cent. capacity, with a lively demand for specialties, including springs, electric cable and wire rope, but with a lesser demand from the general manufacturing trade for those products which they consume in large quantities. The plant of the Morgan Spring Company is operating at full capacity, and those of the Wright Wire Company and the Spencer Wire Company at about 90 per cent., the latter's figures being perhaps a little better than this. As a rule orders are not large, but their number cause the total to reach excellent figures. Deliveries are better, however, the accumulations of orders on the books having diminished materially. No great amount of new building or other extensions are planned. The Spencer Wire Company is adding a watch spring department, which will require some extension of the works. This company has just acquired another considerable tract of land adjacent to its Worcester property, which will permit of large growth later.

The report of the last four months of the employment

department of the Boston Branch, National Metal Trades Association, shows some very slight improvement in September as compared with August. In June there were 312 applications, 172 men were sent to employers and 132 were hired. In July of the 381 applicants, 254 were sent and 162 hired. In August the applicants dropped to 338, and 194 were sent and 65 hired. September showed that 392 applicants were registered of whom 202 were sent and 91 hired. While quite a number of men are out of employment in Boston and the metropolitan district, the percentage of high-class mechanics is small. The United Shoe Machinery Company and others have absorbed most of the good men who became idle because of the absorption of the Wonder Worker Machinery Company by the United Company.

The plans of the New London Ship & Engine Company, New London, Conn., are being carried along rapidly. The enterprise will occupy the plant recently the property of the Eastern Shipbuilding Company, Groton, Conn., directly across the river from New London. Work on a new machine shop is beginning. The building will be 114 x 164 ft., two stories, of steel and brick with concrete foundations. Other buildings are planned, but details are not entirely decided upon. The formal organization has been effected. Laurence Y. Spear, Mattapan, Mass., is the president; Frank T. Cable, Wallaston, Mass., and Thomas A. Scott, New London, vice-presidents; George C. Davison, Hingham, Mass., secretary and treasurer; Frank L. Brake, Wallaston, assistant treasurer. Isaac L. Rice, New York, is chairman of the board of directors, which consists of Elihu B. Frost, Stacy C. Richmond, Henry K. Carse and William H. Reeves, New London, and Messrs. Scott, Reeves, Spear, Cable and Davison. Mr. Rice is president of the Electric Boat Company, New York, builder of submarine boats, and Messrs. Spear, Cable and Davison are the practical men, and are now located with the Fore River Shipbuilding Company, Quincy, Mass. The business will be closely identified with the Electric Boat Company and its allied interests. The statement is made that all interior machinery for submarines now building by the Electric Boat Company for this government and those that may be contracted for in the future will be produced at the Groton works, together with submarine machinery for other governments, including existing contracts with the British government. Torpedoes of a new design will be manufactured, and a new oil burning combustion engine of German design.

The Oven Equipment & Mfg. Company, Stamford, Conn., manufacturer of sectional ovens and inclosed flame gas burners, has increased its capital stock from \$100,000 to \$200,000, the new funds to be used for the extension of the business.

The Hendey Machine Company, Torrington, Conn., has brought out a new threading attachment for lathes, the purpose being to procure rapid thread cutting. It will permit of thread cutting on work held between centers of maximum lengths of 16 3/4 in. in 14-in. machine with 6-ft. bed, 3 1/2 in. in 16-in. lathe with 8-ft. bed, and 3 1/4 in. in 18-in. machine with 8-ft. bed.

John J. Adams, Worcester, Mass., manufacturer of cutting dies and machinery and doing a general machinist's business, is putting in the foundations for a shop building at Mechanic and Mercantile streets and will complete the structure next spring. The building will be 75 x 115 ft. and five stories. Mr. Adams will not occupy the entire edifice in the beginning and will rent it for industrial purposes. When he has moved new equipment will be required.

The Connecticut Clasp Company, Bridgeport, Conn., is erecting a factory building, 40 x 66 ft. and three stories, which will be used for increasing the manufacturing capacity. The company produces corset clasps.

The Capewell Horse Nail Company, Hartford, Conn., manufacturer of horseshoe nails, will erect an addition immediately, to be 40 x 64 ft. and one story. The continuous growth of the business, which is increasing rapidly this year, has made it necessary to secure enlarged facilities, and further additions are planned for next spring.

The site of the new plant of the Baird Machine Company, Oakville, Mass., will be in West Stratford, Conn., an immediate suburb of Bridgeport, where 10 acres of land have been acquired.

The Swift River Box Company, North Dana, Mass., which was burned recently, will rebuild. The mills of the Fabyan Company, Stafford Springs, Conn., were burned October 18, with a loss exceeding \$75,000. The statement is made that they will be rebuilt. The plant of the Connecticut Glue Company, Danbury, Conn., a subsidiary company of the American Hatter & Furriers Corporation, was destroyed by fire October 20, with a loss of \$150,000. The Judson L. Thompson Mfg. Company, Waltham, Mass., will build an addition 48 x 80 ft., one story and basement. The chemical plant of the Frost Finishing Company at West Barrington, R. I., will be rebuilt in that town unless the protest of townspeople prevail.

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Cincinnati

CINCINNATI, OHIO, October 25, 1910.

The general business outlook is becoming brighter. Within the past few days two of the larger trunk line railroads have made purchases of machine tools on lists that have been held up for some time. Only a few firms here received any of this business, but the fact that it was placed shows that the railroads are gaining confidence and that the long expected buying movement may begin at any time. Manufacturers and dealers in railroad supplies are also stocking up in anticipation of a general opening up of business from their railroad customers.

The foundry interests appear to be overcoming their timidity about the future and those who are not now operating up to capacity are quietly preparing to take care of business which they seem to feel sure will commence to come in right after the November elections.

A large number of local machine tool builders are attending the National Machine Tool Builders' Association meeting in New York this week, and judging from the expressions made by some of the leading members before leaving among the numerous reforms that an effort will be made to bring about, will be the insertion of a noncancellation clause in all machine tool contracts.

Woodworking and sawmill machinery moves slowly. Few large plants are being erected and only the smaller machines are in demand.

Local boilermakers report a decided improvement, but state a large part of their present work is for repair jobs.

The Cincinnati Iron & Steel Company, Cincinnati, confirms the published report that it has leased the Union Sheet & Tin Plate Company's plant at Marietta, Ohio. The mill will be started up at an early date rolling merchantable sizes of sheets.

The Seinsheimer Paper Company, Cincinnati, has had plans prepared for a reinforced concrete warehouse which will have two stories and a basement and will measure about 175 ft. square. The estimated construction cost is nearly \$50,000.

The John J. Bruce Company's foundry on Colerain avenue, Cincinnati, is operating up to capacity. The company makes a specialty of railroad castings.

The Tudor Boiler Mfg. Company, Cincinnati, was the successful bidder for furnishing and installing four 150-hp. boilers in the City Hall. This company reports its business for September as being better than any month for over two years. Orders received are principally from Cincinnati and nearby customers.

The Machine Parts Company has been incorporated at Elvira, Ohio, with \$125,000 capital stock, by O. G. Dunn, J. S. George, W. T. Parsch and J. W. Parsch. No building plans have yet been announced.

The Proctor & Gamble Company is increasing the capacity of its power plant, and is also adding to its machine shop at Ivorydale, Cincinnati suburb.

The Cincinnati Iron & Steel Company reports its machinery business as being very good. Recent orders include a number of its 14-in. lathes, to be shipped to Canada; a 5-ton hand-power crane, for the W. G. Duncan Coal Company, Greenville, Ky.; a four-motor, 10-ton crane, for the Victor Safe & Lock Company, Cincinnati; a 14-in. lathe, for F. W. Perkins, Malone, N. Y., and a Cisco lathe, for the Pfau Mfg. Company, Cincinnati.

The Standard Glass Block Company has been incorporated at Frankfort, Ky., with \$200,000 capital stock for the purpose of manufacturing glass blocks. The incorporators are F. J. Arbogast, George C. Shaw, C. E. Collins and S. F. Hoge, all of Frankfort.

The Phillips Sheet & Tin Plate Company, with plants at Clarksburg and Weirton, W. Va., has increased its capital stock from \$2,500,000 to \$5,000,000.

Work has commenced on the new steam shovel shops of the Marion Shovel & Dredge Company, Marion, Ohio, recently mentioned. The Bellefontaine Bridge & Steel Company, Bellefontaine, Ohio, has contract for the structural steel work. There will be three buildings in all.

The city of Columbus, Ohio, awarded contracts last week for the equipment to be installed in the Scioto River pumping station. The Platt Iron Works Company, Dayton, Ohio, will furnish two motor-driven centrifugal pumps, one of 20,000,000 gal. daily capacity, and the other 5,000,000 gal. capacity. The Burke Mfg. Company, Erie, Pa., obtained the order for two 250-hp. synchronous motors to drive the pumps. The installation work will commence as soon as this equipment can be delivered by the manufacturers.

The Independent Steel Company of America, Kenova, W. Va., is contemplating the installation of a heating system to take care of eight buildings, for which considerable equipment will be required. It is investigating the vacuum

system of direct heating and also the fan blast system. The contract is expected to be let at an early date.

The Pfau Mfg. Company's Norwood plant is operating to full capacity, but is unable to keep up with orders coming in for its line of plumbing equipment and supplies.

Plans have been completed for the two-story addition to the plant of the F. B. Richter Company, Cincinnati, recently mentioned, but the actual work of construction will not be commenced before the spring season. The company manufactures engineers' and plumbers' specialties.

The United States Coupling Company, Columbus, Ohio, recently incorporated, advises that it will not erect a factory at present for the manufacture of its uniform compression pipe couplings, but that it expects to make the coupling of pressed steel, at which time it will probably erect a new plant.

The business of the Ripley Foundry & Machine Company, Ripley, Ohio, has been incorporated with \$10,000 capital stock. The company has an established business and does not contemplate making any improvements at the present time.

The Norwalk Drilling Tool Company, Norwalk, Ohio, has been organized and a very complete equipment secured for the manufacture of drilling and fishing tools for oil, gas and artesian well drilling. James Cavanaugh is general manager and expert mechanics have been engaged in every department. This company has no connection whatever with any company or individual previously engaged in this business in Norwalk.

The Champion Iron Company, Kenton, Ohio, has been awarded the contract for the construction of 130 new cells at the Ohio Penitentiary, the contract price being \$37,254.

Cleveland

CLEVELAND, OHIO, October 25, 1910.

While the local machinery market is not showing a great deal of life the demand is somewhat more active than a month ago and the outlook shows some improvement. Orders for machine tools are very scattered and are almost entirely for single tools or for small lots. Most of this business is coming from larger manufacturing plants or from new concerns that are starting small plants. Small machine shops that have been engaged largely in automobile work are not very busy at present and few of these are adding to their equipment. More new companies are being formed than for some time past to engage in manufacturing in metal working lines, and a more active demand from this source is expected shortly. General conditions among manufacturers show little change. While plants are not crowded with orders the majority are comfortably filled with work. The demand for gas engines is quite active. Makers of transmission machinery report a fair volume of business. In heavy handling machinery some good business is in prospect. The demand for electric motors in small sizes, which has been somewhat quiet recently, has improved during the past two weeks. There is a fair demand for good second-hand tools, but the number being offered to dealers is not large.

In the foundry trade the demand for small light gray castings continues fairly active and local jobbing foundries making that kind of castings are well filled with work, but the demand for medium and heavy castings is light.

With the object of securing new industrial enterprises for Cleveland 29 members of the Cleveland Chamber of Commerce, headed by D. T. Croxton, president of the Cleveland Furnace Company, have banded themselves together as a Committee on Industrial Development. This committee will make special efforts to secure plants in this city for the manufacture of products largely used here, but manufactured here only in a small way, if at all. The committee has found that the following products are not made in the city at all or only in small quantities, not sufficient to supply the local demand: Radiators, structural steel, tool steel, sheet copper, light boilers, light engines, manganese and vanadium steel castings, large valves and fittings.

Plans have been prepared for additions to the water works system in Cleveland and the Water Works Department of the city will advertise for bids shortly for the new equipment required. Two 25,000,000-gal. pumping engines will be purchased for the Kirkland pumping station, to replace the present two 15,000,000-gal. low duty engines. The plans also provide for the erection of a high pressure pumping station with four centrifugal units, with a capacity of 10,000 gal. per minute and a 270 lb. pressure. It has not yet been decided whether to install gas engines or electric motors for the 2000 hp. that will be required.

The Reliance Electric & Engineering Company, Cleveland, has received an order for 25 Reliance motors for driving machine tools recently ordered by the Chicago Railway Company. This is in addition to a contract for 105 motors

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for the same company, just completed. The Reliance Company has also just received an order for a number of Reliance adjustable speed motors for new threading machines to be installed in the addition to the tube mills of the A. M. Byers Company, Pittsburgh.

The Standard Welding Company, Cleveland, will in a few days occupy the addition to its plant, now under construction, which will give it 85,000 sq. ft. more of floor space, increasing its capacity about 50 per cent. The company reports a growing demand for tubing for various purposes, and this department of the plant is very busy. The steady growth of the motor truck business is noticed by the company in the recent large increase in orders for bands and other parts for commercial vehicles.

The Hill Clutch Company, Cleveland, recently received an order for some very heavy power transmission machinery, consisting of 8 and 10 in. rolling mill type of bearings, the English system of rope drives, shafting, couplings, &c., for installation in the H. P. Works of the American Steel & Wire Company in Cleveland.

The Buckeye Aluminum Company, manufacturer of aluminum kitchen ware, will move from Doylestown to Wooster, Ohio, having reached an agreement with the Board of Trade of the latter city to erect a new plant and agreeing to employ an average of 75 men for 10 years. The company will be given a factory site and a bonus of \$12,000. The erection of the new factory will be started at once, and it is expected to have it in full operation by next April.

The Bruce-Macbeth Engine Company, Cleveland, reports recent sales as follows: One 75-hp. four-cylinder natural gas engine to the People's Milk Company, Buffalo, N. Y.; one 135-hp. four-cylinder producer gas engine, also fitted for gasoline, to the village of Salamanca, for the municipal water and light plant, this being the fourth order for engines for this plant; three 150-hp. four-cylinder natural gas engines, each to be direct connected to 100-kva. direct current generators, and one 35-hp. two-cylinder natural gas engine to be direct connected to a 25-kw. generator, to the County Commissioners of Mahoning County, Ohio, for lighting the jail and new court house at Youngstown, Ohio; two 80-hp. twin cylinder natural gas engines to the C. L. Flacus Glass Company, Tarentum, Pa., being the fourth order from this company; one 165-hp. four-cylinder producer gas engine, to be direct connected to a 100-kva. direct current generator, for the new lighting plant being erected by J. W. Ellsworth for the village of Hudson, Ohio; two 200-hp. four-cylinder natural gas engines for the Institute of Feeble Minded, Polk, Pa.; one 55-hp. two-cylinder natural gas engine for the Faultless Rubber Company, Ashland, Ohio; one 30-hp. producer gas engine to Prather & Niemeyer, Clear Spring, Md.; one 65-hp. four-cylinder producer gas engine to the Spanogle-Yeager Milling Company, Reedsville, Pa.; one 35-hp. two-cylinder natural gas engine to the National Glove Company, Columbus, Ohio; one 135-hp. four-cylinder natural gas engine, for belt drive to generator, to the Elmore Mfg. Company, Clyde, Ohio.

Anton Burchard, engineer, Cleveland, has prepared plans for a new plant to be erected by the Clarke Carter Automobile Company in Jackson, Mich., for which contracts will be placed shortly. A three-story brick building, 48 x 166 ft., will be built. As this company's product is an assembling proposition little equipment will be required outside of an elevator and heating plant.

The Suspension Roller Bearing Company, Sandusky, Ohio, has been incorporated, with a capital stock of \$250,000, by E. A. Boyer of New York City and others. As a result of negotiations with the Sandusky Business Men's Association it is announced that the company will erect a large plant in Sandusky for the manufacture of roller bearings. A 10-acre site has been secured for that purpose.

The Forth Motor Car Company, recently organized by C. R. Forth and others of Mansfield, Ohio, has closed a deal to locate in Bucyrus, Ohio, taking over the steam shovel plant in that city. The company will do only assembling at the start, but expects to gradually work into the manufacturing end.

The International Store Service Company, which has taken over the patents of the Bilt-Rite Mfg. Company of Minneapolis, expects to establish a plant in Canton, Ohio, within the next month for the manufacture of a cash carrier system for use in stores. The company has a capital stock of \$150,000.

The O. O. Poorman Machine Company, builder of sheet corrugating machinery, has moved from Dayton, Ohio, to a new plant that it has just completed in New Bremen, Ohio.

Oscar Lear will build a two-story factory building at 288 East Long street, Columbus, Ohio, for the manufacture of automobile trucks.

The American Seeding Machine Company, Springfield, Ohio, will erect a new foundry building, 105 x 200 ft.

L. A. Cobb, president of the Columbian Hardware Company, Cleveland, has been appointed receiver of that com-

pany as the result of suit brought by a stockholder, the company consenting to the request. The company's plant will continue in operation.

The Champion Safety Lock Company, Geneva, Ohio, recently increased its capital stock from \$75,000 to \$100,000, to take care of extensive plant additions. It has also recently purchased a large adjoining plant, giving it about three times its present factory floor space, and is now laying this out for a large extension to its line of hardware.

Detroit

DETROIT, MICH., October 25, 1910.

The activity recently noted continues practically without abatement, and in some lines of the machinery trade there has been notable improvement within the past fortnight. Inquiries in general are also of a character to indicate that considerable further business may be looked for from the same or similar sources, so that manufacturers and dealers in these several lines anticipate a steady influx of orders for at least three or four months to come.

Despite the heavy purchases made last spring gear cutting machinery is being more generally called for than ever before, and while there is at present a decided preponderance of inquiries over orders, there are unquestionably a large number of bookings to be made by the first of the year. Automatic screw machines will also be needed in increasing quantities. One thing that holds back purchases on this account is the difficulty of securing skilled men for handling them, local papers being full of advertisements which meet with comparatively little response.

Just at present manufacturers, jobbers and dealers in various lines are looking to the upper peninsula for a good share of their trade, the activity there in new construction, equipment and other improvements being quite pronounced. Nearly all of the large mining companies are buying freely, and local foundries, machine shops, woodworking plants, &c., are deriving more of their supplies than ever before from Detroit and other cities of lower Michigan.

Spence Brothers, Saginaw, Mich., have been awarded the contract for erecting a three-story leather factory for the F. W. Carlisle Company of that city, which is to be equipped with the most modern machinery, including electric motor drive. It is probable that sprinklers and a very complete system of fire protection will also be installed.

A large new sawmill for the Geoffrey von Platten Lumber Company is nearing completion at Iron Mountain, Mich., and it is stated locally that this will be followed by the erection of a hardwood flooring factory.

Work has been started on a group of manufacturing buildings which will constitute the plant of the newly organized Pontiac Motor-cycle Company, Pontiac, Mich., of which Robert M. Brownson is president, James B. Book, Jr., secretary, and Harry L. Stanton treasurer.

Construction work is about to begin on a new two-story pumping station, 40 x 40 ft., for the city of Wyandotte, Mich.

It is reported from Marion, Ind., that the City Council has ordered the purchase of additional boilers and pumping machinery for the municipal water works system.

A five-story addition, 64 x 80 ft., equipped with power and woodworking machinery, will be erected by the Woodward Furniture Company, Owosso, Mich. It is stated locally that the extent and character of the apparatus required has not yet been fully decided upon.

The Detroit Metal Forming Company has been organized here and incorporated for \$25,000. No plans have as yet been announced.

It is reported that Scherer & Wadsworth, Detroit, are about to let contracts for a three-story automobile factory, 64 x 400 ft. The details of the equipment have not yet been fully outlined.

Work has been nearly completed on the new power plant for the Chief Consolidated Mine Company, near Houghton, Mich. The boilers were recently placed on their foundations and heavy hoisting machinery is being installed.

The Nelson-Peterson Mfg. Company, Detroit, has doubled its capital stock.

A hydroelectric plant for power and lighting will be constructed in the near future by C. G. Hart, Honor, Mich. The plans are still to be worked out.

It is stated locally that the Detroit Dearborn Motor Car Company, Dearborn, Mich., is planning the construction of a manufacturing plant 45 x 300 ft.

It is reliably reported that not less than 100 of the new factory buildings of this city have been equipped with the Fenestra solid wrought steel window frames and sashes of the Detroit Steel Products Company's manufacture.

It is probable that the construction of a modern system

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of water works, including electrically operated pumping machinery, will be undertaken in the spring at Homer, Mich.

A pumping plant is to be installed at Painesville, Ohio, by the Lake Shore & Michigan Southern Railroad, to provide for watering locomotives and other service.

The Wolverine Aluminum & Brass Foundry Company, Jackson, Mich., has just completed the erection of a new foundry building containing six melting furnaces of the crucible type. The other equipment consists of an Adams molding machine, Hammer core machine, Wright band saw, Globe rattler, Sterling grinder and miscellaneous equipment.

The Ehinger-Vogt Company, Palmyra, Mich., has recently completed the construction of a new factory building which will be equipped with a blower system. Other equipment to be installed includes an automatic lathe and a power feed rip saw.

The Michigan Products Company, Grand Rapids, Mich., has moved into new and larger quarters on Market street, where it has better facilities for handling its order work of machined products.

The Northern Engineering Works, Detroit, Mich., is completing an addition to its crane erecting shop. The new building is approximately 60 x 160 ft., of fireproof structural steel and brick construction and having steel sash. Three cranes and two overhead trolley runs will serve the floor. Electric and pneumatic hoists will be used. The machinery has been installed and the building will be occupied this month. A new storage yard for structural steel has been laid out alongside the addition and is covered by a 60-ft. span three-motor electric Northern Gantry crane of special construction. The company reports the largest demand for its products in its history.

Pittsburgh

PITTSBURGH, PA., October 25, 1910.

In this district new projects are not as numerous as they have ordinarily been during the fall season and the orders now being entered are principally for the account of plant improvements. Machinery builders look more to other sections of the country for their business and in many cases their representation through branch offices or traveling salesmen is being materially strengthened.

The demand for machine tools, while not at all brisk, is better than it was a month ago. Boring mills, drill presses, shapers and planers have been quite largely called for of late and the use of milling machines, grinders, gear cutters, &c., is being extended. For lathes there has recently been about the usual inquiry ranging from small speed lathes up to engine lathes of the heaviest pattern. Indications now point to the fact that during the winter there will be more of the latter required in this district than at any previous time, owing to the improvements being made at plants where heavy machinery is built.

In respect to equipment for furnaces, ovens and mills, the situation is somewhat complicated. A few of the companies that depend especially upon this class of trade seem to be doing a very good business, while with others work is slack. A good deal of business is, however, in prospect, and the probabilities are that all of the principal manufacturers in this line will have about as much as they can do before many months have elapsed.

Dealers in various auxiliary apparatus, fittings, shop and foundry supplies, are having a good run of business and a relatively high level of prices is being maintained. Sales this year cover a wide stretch of territory and the demand appears to be very evenly distributed throughout the country. It has also been appreciably reinforced by orders for foreign delivery, the latter having come mainly through the large export and trading companies.

The Climax Box Company, Pittsburgh, has been incorporated by William Hoerl, W. L. Emmerick, L. Zaller and others, to establish and operate a box factory. No definite plans have, however, as yet been made public.

The Canton-Hughes Pump Company, Canton, Ohio, is installing a 6,000,000-gal. pumping engine at Bloomington, Ill., the contract having been taken in competition with the leading builders of such engines.

The Pittsburgh Coal Company, Pittsburgh, Pa., is letting contracts for the erection of a thoroughly modern steam power plant at Export, Pa.; also for the construction and equipment of a machine and forge shop to be used in repair work at one of its principal mines.

The Erie City Iron Works, Erie, Pa., has been awarded the contract for a 115-hp. four-valve engine, 24-in. single-suction volute pump and surface condenser, to be installed in the municipal power and pumping station at Jacksonville, Ill.

The Union Iron Works, Erie, Pa., has completed plans for a number of improvements which include the erection of

a new office building. The contract for the latter has already been let.

The Erie Foundry Company, Erie, Pa., which does a large business in castings for the motor car trade, is making a specialty of finished automatic cylinders, and with the increased activity in this line prospects for the remainder of the fall and winter months are exceptionally good.

Improvements, including the erection of an additional shop, are being made to the plant of the Burke Electric Company, Erie, Pa. The demand for motors of the company's manufacture has been particularly strong this season.

The Reed Mfg. Company, Erie, Pa., is materially increasing its facilities for the production of vises, pipe wrenches, &c., a new three-story building being in course of erection.

The F. S. Love Mfg. Company, Johnstown, Pa., is extending its system of electric drive, the installation of some new machinery having recently been provided for.

The Ohio Valley Enamel Company has been organized at Pittsburgh, Pa., by H. Hindley, Joseph R. Paull and J. Barrier, to operate a plant for the manufacture of enamel and galvanized wares.

In connection with plans for the new electric power plant of the American Locomotive Works, Pittsburgh, as recently made, it is stated that the management has decided to eliminate, as far as possible, the use of all shafting, belting, &c., and to drive the machinery in future directly by means of motors. Several large lists for this purpose are expected to come out in the near future.

The Pittsburgh Machinery & Equipment Company, Fulton Building, Pittsburgh, now represents in Western Pennsylvania the following concerns: Erie Engine Works, Erie, Pa., builders of plain slide valve and automatic engines, boilers, and feed water heaters; Ohio Ceramic Engineering Company, Cleveland, Ohio, Lakewood concrete mixers, which replace the McKelvey mixer, buckets, contractors' cars, &c.; Davenport Locomotive Works, Davenport, Iowa, narrow and standard gauge locomotives, and National Hoisting Engine Company, Harrison, N. J., hoisting engines. The Pittsburgh Machinery & Equipment Company deals exclusively in second-hand contractors' equipment and has a complete stock of hoisting engines, buckets, pumps, air compressors, &c., ready for prompt shipments.

The Hall Steam Pump Company, Pittsburgh, is building two hydraulic pressure pumps for the Babcock & Wilcox Boiler Company to be made entirely of steel castings. The water end of each pump will weigh 12 tons. This duplex pump will have 6-in. plungers and 42-in. stroke, and will be operated by a Corliss engine to a pressure of 2000 lb. per sq. in. The Hall Company also has a contract for a crank and flywheel dry vacuum pump, for export to Manzanilla, Mexico. The cylinders will be 44 x 36 in., and when completed the pump will weigh 35 tons.

Indianapolis

INDIANAPOLIS, IND., October 25, 1910.

The Central Steel Company, Indianapolis, has been dissolved. It owned a rolling mill property in the city which was abandoned as a manufacturing industry several years ago and the machinery sold more recently. The land and buildings on it have been sold to the Wabash Realty & Loan Company of Terre Haute, Ind., and it is planned to build large cold storage houses.

The Santo Specialty Company, Indianapolis, has been incorporated with \$40,000 capital stock, to manufacture house-cleaning machinery. The directors are C. N. Van Cleave, Albert Cox and M. B. Rattay.

The Maxwell-Briscoe Indianapolis Company has changed its name to the United Motors Indianapolis Company.

The Hamner Mfg. Company, Indianapolis, has been incorporated with \$10,000 capital stock, to manufacture vehicles. The directors are John S. Hamner, Roscoe S. Parr and Jacob H. Allen.

The Carbon Coal and Clay Company has been organized at Indianapolis, with \$50,000 capital stock, to develop coal and clay properties. The directors are W. C. Shoemaker, A. A. St. Clair, J. N. Balch, C. H. Ehrmann and W. R. Mayo.

The Trinidad Mines Company, Indianapolis, has been incorporated, with \$125,000 capital stock, to operate mines in Guerrero, Mexico. The directors are F. O. Dorsey, L. D. Hay, J. N. Carey, Henry Jameson and O. V. Jameson.

The Kokomo Junior Tire Company has been incorporated at Kokomo, Ind., with \$10,000 capital stock, to manufacture tires. The directors are A. L. Sprangle, J. C. Dewees and J. E. Palethorpe.

The Indiana Power Company, Indianapolis, has increased its capital stock from \$25,000 to \$50,000. R. B. Spellman is president of the company.

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The Forse Mfg. Company of Anderson, Ind., has increased its capital stock from \$6500 to \$20,000. W. H. Forse, Jr., is president of the company.

The American Peats Product Company has completed a plant at Lakeville, Ind., in the great marsh lands of the northern part of the State. The factory, which is in the heart of a swamp, cost \$100,000, and will use about 10 tons of raw product a day. The muck will be made into peat by chemical process. J. H. Van Glahn, the inventor of the machinery, is manager of the factory. The company will build other factories in Canada and in Maine and Minnesota.

The Diamond Automobile Company, at South Bend, Ind., suffered a fire October 18 that caused a loss of about \$50,000. The flames were confined to the paint shop, which was destroyed, along with 32 partly finished automobiles. There was \$10,000 insurance.

The Hartman Mfg. Company, Richmond, Ind., has increased its capital stock from \$25,000 to \$50,000.

The Gosport Electric Company has been incorporated at Gosport, Ind., with \$10,000 capital stock, to supply municipal and domestic lighting. The directors are Louvent Lowenberg, C. J. Kiefer, R. H. Wold, Charles Abraham and W. J. Stroder.

The Elkhart Dry Battery & Signal Company, Elkhart, Ind., has changed its name to the Elkhart Electro-Corno Company.

W. F. Stillwell, Lafayette, Ind., has secured the contract for an addition to the French Lick Springs Hotel, French Lick, Ind., to cost \$225,000, exclusive of plumbing, heating and elevators, the contracts for which have not been let. The building will be of reinforced concrete construction, seven stories, 100 x 287 ft.

The Morgan Register Company, Anderson, Ind., has been incorporated with \$100,000 capital stock. The directors are F. A. Morgan, H. A. Mansfield and H. C. Stilwell. The company will manufacture registering and ventilating devices for cars.

The Cement Tile Company, Monticello, Ind., has been incorporated, with \$20,000 capital stock, to manufacture sewer and drain tile. The directors are J. D. Timmons, T. W. O'Connor, W. F. Brucker, I. N. Cash and E. E. Sluss.

The Backstay Machine & Leather Company, Union City, Ind., has been incorporated, with \$120,000 capital stock, to manufacture car and carriage machinery and parts. The directors are R. C. Schemmel, R. L. Hill, S. H. Clark and B. P. Southard.

The Maxwell-Briscoe Motor Company, New Castle, Ind., is contemplating the erection of extensions to its factory during the spring of 1911.

St. Louis

ST. LOUIS, Mo., October 24, 1910.

The Missouri Pacific Railway placed its order against the list issued several weeks ago, and practically all the business went to a large New York house, the only items excepted being some special tools. The list was reduced somewhat under the original specification, but the machines purchased nevertheless constitute probably one of the largest single tool orders placed by any buyer during the last few years.

The Wabash Railroad has resurrected a small list, originally issued several months ago, and evidently intends to buy now.

The Missouri, Kansas & Texas Railroad has been buying some tools from time to time, and all indications point to more or less steady buying by the St. Louis trunk lines from now on. This is looked on by the trade as a good augury and a decidedly more optimistic feeling prevails among the machine tool houses as a result.

The awakening of the agricultural population to the fine increase in efficiency of land properly treated with fertilizer is resulting in a large increase in the production of fertilizers. As an instance of this is cited the large new fertilizer plant now nearing completion on the Missouri Pacific belt line, being built by the National Utilization Company, whose headquarters are at Norfolk, Va. This plant will operate mainly on leather scrap, and has some 50 carloads already on its premises. The machinery used is all special and made according to the Company's own designs.

Mattemann & Wheeler are starting up a general repair shop and have just purchased their machine tool outfit.

The Ludlow Saylor Wire Company, manufacturer of wire cloth and other specialties, finds business quite satisfactory.

Several new adding machine propositions are being developed here. The Moon Hopkins Billing Machine Company has a large force of men at work on its combined type-writer and calculating machine, and the Duplex Adding

Machine Company has a good size shop developing its new machine. The good supply of high grade mechanics suitable for this delicate class of work has been educated up in St. Louis within the last 10 years and more and more enterprises of this grade are being taken hold of constantly.

Business with the frog and switch shops is picking up nicely. Up to a few weeks ago there plants were rather dull, due to the railroads' policy of retrenchment. The various structural shops also find business good.

The St. Louis Axle Company is rapidly getting its plant back into shape after the fire suffered recently and will put in some equipment.

The Terminal Railroad has an inquiry out for one or two tools. This is the Union Terminal System, operating most of the switching facilities on both sides of the river, is owned jointly by all the trunk lines entering St. Louis, and provides a terminal service. The Terminal Association is making arrangements now to invest several million dollars in new freight yards in what is known as the Ranken tract, about 2 miles west of the Union Station. It is proposed to put up a strictly modern system of warehouses as soon as permission can be obtained from the Municipal Assembly.

The Bayer Steam Soot Blower Company, St. Louis, has been incorporated. Capital stock fully paid, \$4000. The incorporators are Frank X. Bayer, Leo. J. Bayer, August V. Bayer and Frank A. Bayer. The company will manufacture boiler cleaners.

The Charter Oak Stove & Range Company, St. Louis, has filed a statement with the Secretary of State, increasing its capital stock from \$200,000 to \$400,000.

The Monarch Supply Company, St. Louis, has been incorporated with a capital stock of \$6000, fully paid. The incorporators are Alfred M. Lane, Oscar W. Hoappaw and J. G. Tucker. The company will engage in the manufacture and sale of building appliances.

The Essmuller Mill Furnishing Company, St. Louis, finds that its improved facilities at its new factory, which was designed and built for its special requirements, is resulting in a steady increase of business.

The Superior Motor Sales Company, St. Louis, has been incorporated; capital stock, two-thirds paid, \$75,000. The incorporators are Murray M. Baker of Peoria, Ill.; Oliver L. Garrison, Oliver L. Garrison, Jr., and others of St. Louis. The company will engage in the manufacture and sale of automobiles.

The Reliance Milling Company, Murphysboro, Ill., of which the Messrs. Sauer are the proprietors, intends to further increase the capacity of the mill by the purchase of additional machinery.

The Bunch Elevator at Pine Bluff, Ark., is to be reopened by the W. B. Worthan Company of Little Rock, Ark. New machinery will be installed and the plant generally overhauled.

The Helena Rock Company, Helena, Ark., recently incorporated with a capital stock of \$25,000, will soon begin active operations at its quarry. The machinery has been purchased and the company expects to begin quarrying sandstone within the next few weeks.

R. L. Williams, Hot Springs, Ark., is making arrangements to establish a flour mill in that city. The mill will be operated by electricity and have a capacity of 40 barrels.

The United Mill Works, Stuttgart, Ark., has been incorporated with a capital stock of \$50,000, of which \$14,700 has been subscribed. The incorporators are Ray O. Burke, J. I. Porter, Jerome L. Tindall and others.

The Lumber & Mfg. Company, Trumann, Ark., has begun the erection of a large veneer and sawmill plant, which when completed will represent an investment of over \$200,000 and give employment to about 200 men.

The Poinsett Lumber Company, a new corporation doing business in Arkansas, will erect a large mill at Trumann, Ark. Virgil Norman of Harrisburg, Ark., who will be the general superintendent of the plant, states that more than 200 men will be employed at the mill and in the yards, besides men employed in the woods cutting timber and getting the logs to the mill.

Charles Hochmeister of Dagonia, Ind., will erect a box factory at Gravette, Ark., in the near future.

The Abbeville Sugar Company, Ltd., Abbeville, La., has received a proposition from capitalists at St. Mary, La., to erect a 600-ton refinery at Abbeville, provided local interests will furnish \$30,000 of the capital stock, and with the proposition carries a promise to furnish a bond guaranteeing the completion of the contract.

The Parlin & Orendorff Company has broken ground in St. Louis for the erection of a new six-story fireproof building, 80 x 155 ft. The building will be equipped with electric elevators and with the Parlin & Orendorff system of steam heating, with vacuum system attached, and high pressure boilers.

The Hot Blast Oil Burner Company, Springfield, Mo., has been incorporated with \$15,000 capital stock by W. A.

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C. Murphy, J. W. Roberts, A. S. Cowden and C. A. Hubbard.

Toronto

TORONTO, October 22, 1910.

The weather has been an important favorable factor in business. It has been all that the transportation interests could desire for the movement of the crop to market, whether by rail or water, and it has enabled outdoor work of all kinds to be carried on as actively as ever. The free marketing of the crop means the brisker circulation of money. With money more plentiful and the weather pleasant, the tone of trade improves. The conditions are healthful for the machinery trade. The bank statement just issued for the month of September, indicates that the bankers of the country see no reason to be stinted in their supply of funds to the industries.

A party of Montreal bankers, brokers, manufacturers and merchants visited Shawinigan Falls a week ago. The new power plant which the Shawinigan Falls Water & Power Company is adding to its system was inspected. That plant, which will produce 75,000 hp., will not be completed in less than a year. Its total cost is placed at \$2,225,000. The party also visited the Northern Aluminum Company's works, the Shawinigan Cartridge Company's works and the new mill of the Shawinigan Cotton Company.

At a meeting of the Montreal Light, Heat & Power Company's directors on Monday an item of expenditure passed was \$200,000 to provide for the street lighting contract obtained from the city. This covers the installation of lamp and station equipment.

A meeting of the shareholders of the Canada Starch Company, Brantford, Ont., is called for October 26 to consider a proposed bond issue of \$500,000 to provide money for extending operations.

On Monday the contract was awarded for the construction of a four-story silk and cotton manufacturing plant at Beauport, near Quebec. It will give employment to 400 hands.

The new power house of the Saraguay Light, Heat & Power Company at Cote des Neiges, Montreal, is nearing completion. Machinery will be put in at once.

The Acme Motor Carriage & Machinery Company is the name of a corporation in which are merged certain existing industries. Its chief places of business are in Hamilton, Ont., its proposed capital \$1,000,000. The Baynes Carriage Company of Hamilton and the American Good Roads Machinery Company of Goderich, Ont., are to be embraced in the new company. Persons connected with the automobile industry in Detroit are said to be prominent in the affairs of the new concern. Automobiles are to be built in the factory of the Baynes Carriage Company, which is to be enlarged for the purpose.

The Industrial Committee of Woodstock, Ont., has been in correspondence with 10 industrial concerns that were seeking a location for new manufacturing works. Of these, as has been mentioned in a former issue, three entered into an arrangement to establish plants in the town—the Canadian Linderman Company, the Woodstock Textile Company and the Fibre Folding Package Company. Others were Workman and Ward, the Caillards, makers of roller wire blinds; the Ratchet Wrench Company, the Taylor-Scott Company, Toronto; a brass and iron bedstead company of Glasgow, Scotland; a company in the same business in the United States and a tile manufacturing company. Whether the negotiations with any of these concerns will yet come to anything remains to be seen.

The Caster Milling Company has been incorporated under Ontario laws, with a capital stock of \$300,000 and chief place of business St. Mary's, Ont.

At Owen Sound, Ont., the Corbet Foundry & Machinery Company is erecting a new building. William Kennedy & Sons are extending their works for the manufacture of iron and steel castings and turbine water wheels, and the North American Furniture Company is putting up a new factory.

The United Produce Company has taken over the Toronto Cold Storage Company's plant and the Palmerstone Pork Packing Company's plant. Extensive improvements are to be made in the Toronto plant. The company's capital stock is \$1,000,000.

The Ottawa Car Company has obtained a permit for the erection of a new factory in Amherst street, Ottawa.

Hamilton & Stott, St. Thomas, Ont., have the contract for installing a central heating plant for the Helena Costume Company, London, Ont. The plant put in will be the John-Manville tile conduit system.

Plans have been completed by the Strauss Bascule Bridge Company, Quebec, Que., for a steel and concrete bridge to span the Princess Louise docks there. It is to be 88 ft. long.

Clarke & Monds, Toronto, have the contract for build-

ing the power development works near Auburn, Ont.

The City Council of London, Ont., has accepted the tenders of the National Meter Company and the Trident Company for supplying the water meters required by the city.

Tenders are invited for the construction of a foundry building at Penetang, Ont., the dimensions to be 60 x 525 ft. Address W. H. Hewson, secretary, Penetang, Ont.

United Motors, Ltd., is the name of a company that has been incorporated in Ontario to manufacture motor cars, bicycles, horse carriages, aeroplanes and dirigible airships. Its chief place of business is to be in Welland, Ont., and its capital stock \$200,000.

The Rubber Special Machine Company has been incorporated. Its capital stock is \$40,000 and head office is in Toronto.

The E. Long Mfg. Company, Orillia, Ont., has now all the machinery installed in the new foundry it has erected in that town.

The Industrial Committee of St. Thomas, Ont., has come to an agreement with the Monarch Knitting Company for the establishment of a \$60,000 branch factory in the city. The ratepayers will vote on the proposal to have the city lend the company \$30,000 for five years.

The City Council of Brantford, Ont., has passed by-laws granting a fixed assessment to the Ham & Nott Company for the Niagara Bedstead Company; confirming an agreement between the city and the Crown Electrical Company; and confirming an agreement between the city and the Brantford Emery Wheel Company.

The St. Lawrence Sugar Refining Company is adding to its works at Maisonneuve, a suburb of Montreal, a new boiler house to cost \$20,798 and a factory building to cost \$39,000.

Machinery is being set up in the new factory of the Rowen-Ogg Shoe Company at Guelph, Ont. It is expected that the plant will be ready for operation when the heating outfit is installed by the city.

Stewart & Hewitson, Port Arthur, Ont., have the contract for the construction of a steel and concrete bridge over the Ottawa River at Mattawat. The bridge will be 2700 ft. long and the piers 50 ft. high; the cost is about \$300,000.

The Canada Producer & Gas Engine Company, Guelph, Ont., has under construction a considerable number of engines of 125 hp., and is also busy on gasoline engines of much smaller power for agricultural and domestic use. Its drafting departments are now engaged upon a pattern for a digger engine capable of developing 200 or 300 hp.

The Collier Electric Company has decided to go into the manufacture of the Bissell electric motor, for sewing machines, at its factory in Peterborough, Ont. The company has been importing motors from Toledo, but the 12-month period within which the importation of a patented article is allowed being near expiration, the company will now begin to manufacture. Mr. Collier has invented an electric water heater that is also to be manufactured by the company.

The Canadian Commercial Motor Car Company has been organized in Windsor, Ont., to manufacture commercial motor vehicles to be sold exclusively in Canada. A delivery truck of 1800 lb. capacity will be one of the lines turned out. The capital is \$40,000.

On Tuesday 20 cars of machinery were shipped from the Watrous Engine Works, Brantford, Ont., to the Pacific coast of Canada. The shipment will go to New York and from that port will be forwarded by water to its destination.

A meeting of the shareholders of the Sillicker Car Company, Halifax, N. S., to consider an offer made in behalf of the new controlling interest to purchase the whole business. J. B. Douglas, one of the parties in the controlling syndicate, says that \$400,000 will be added to the company's capital.

The Ontario Wind Engine & Pump Company is building a boiler and paint room at its works in Toronto.

The Canada Metal Company, Toronto, has taken out a permit to put up a two-story building to cost \$35,000.

J. P. Fillingham, formerly assistant superintendent of the Reo factory at Lansing, Mich., has been appointed general superintendent of the Reo Motor Car Company of Canada at St. Catharines, Ont.

The George Anderson Company, an English concern, will establish a branch in Montreal, where cranes and stone machinery will be made.

The Cockshutt Plow Company, Brantford, Ont., will erect a warehouse in Brandon, Man., this autumn.

The Chipman-Holton Company, Hamilton, Ont., has secured property on which to build a factory in Welland, Ont.

The ratepayers of Tillsenburgh, Ont., have voted in favor of a by-law to raise \$25,000 to build an electric power station for the distribution of power supplied by the Hydro-Electric Power Commission.

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Farand & Delorme, Ltd., is the name of a company incorporated under the Dominion laws to take over and carry on the business of Farand & Delorme, copper-smiths, Montreal, and to produce and trade in metals, machinery, engines, boilers, &c., the capital stock to be \$100,000, and the chief place of business in Montreal.

The Wilson Bros. Motor Company, with a capital stock of \$50,000, has been incorporated as a Dominion company, with its head office in Montreal.

According to the estimate of the City Architect's department, the total values of buildings constructed this year in Toronto will be \$20,000,000, which is \$2,000,000 more than was expended on new buildings last year.

The new building for the Burlington Gasoline Engine Company, Burlington, Ont., has been completed, and the machinery is now being installed. The new engine has been inspected in place by the expert of the A. R. Williams Machinery Company, Toronto.

The *Daily News* of Port Arthur, Ont., states on what it represents to be reliable authority that the work of building a foundry to be operated in connection with the Atikokan Iron Company's furnace in that city will be begun this year. The enlargement of the company's pig iron making capacity is also expected to be begun this year.

The annual statement of the Canada Cycle & Motor Company, Toronto, shows profits of \$144,000, which is 18 per cent. on the company's capital stock of \$800,000.

The Ontario Iron & Steel Company, Welland, Ont., adopted the Amalgamated Association wage scale for its rolling mill and 50 men struck. This caused the closing down of the mill.

The town of Galt, Ont., has sold debentures to the amount of \$66,660, the proceeds to be used in the construction of works for the distribution of power supplied by the Hydro-Electric Power Commission.

The Bridge Superintendent for the County of Hastings, Ont., has reported that 250 of the bridges in the county cannot safely be subjected to the strain of carrying traction engines, and as the statute requires that municipalities must provide bridges to support loads of 8 tons, the county authorities contemplate an outlay on new bridge-building account of not less than \$600,000 in the next few years. The *Belleville Ontario* urges that concrete be used in the new structure, maintaining that steel bridges have no such permanency.

A large paper mill is to be erected at Lac au Sable, in the Saguenay region of Quebec Province, by Price Bros., Ltd., Quebec, the company offering a large bond issue, of which it is thought part of the proceeds will be used in the building of the mill, which is to have a daily output of 150 tons.

Seven proposals for the establishment of new industries in Berlin, Ont., were considered by the Industrial Committee of the Town Council at its meeting this week. Two were considered favorable and will be taken up. One is from a concern manufacturing automobiles, and the other from a maker of gasoline engines.

The Dayton Scale Company, Dayton, Ohio, has purchased a lot with 200 ft. frontage in the northern part of Toronto, on which is to be erected a branch factory.

It is announced that the Canada Metal Company, Ltd., Toronto, will establish a plant in Winnipeg as soon as the necessary arrangements can be completed. A large amount of the work formerly done in Toronto will be done in Winnipeg. As the West grows the demand for this work will increase, and it is expected that the plant will be a big one. For the beginning of the enterprise the company has purchased the Winnipeg plant of the Ontario Engine & Pump Company. The latter company, desiring to extend its plant, had decided to locate in another part of the city, where a \$100,000 plant will be established.

San Francisco

SAN FRANCISCO, October 19, 1910.

Some curtailment of business is noted in many of the principal lines of machinery, and local dealers are becoming convinced that the next four or five months will be extremely quiet. The decrease is partly due to the beginning of the rainy season, which will within the next 30 days cause the suspension of much construction and development work and will necessitate the closing of many sawmills, mines, &c. The demand for irrigating machinery is also likely to be somewhat curtailed during the winter.

After a few weeks of moderate activity the machine tool business has relapsed into its former dull condition and any revival in this line will depend upon a final adjustment of labor conditions. A few tools are being sold, but the total movement is extremely small. Parties who have been closely in touch with the trade estimate the entire machine tool sales on the Pacific Coast for the current year at less than half the normal volume and can see no likelihood of improvement, at least in regard to large tools, for many months. While

the railroads are building some new shops, their purchases of tools have been practically nil, and there is an apparent determination on their part to withhold orders as long as possible. It is stated that the equipment of the shops recently burned at Tucson, Ariz., will be replaced by old machinery from other points. The navy yard at Mare Island, Cal., is rushed with work, and is badly in need of more tools, but no business of any consequence is expected from this quarter before the next session of Congress. The demand for wood-working machinery has also dropped off. Inquiries are coming up all the time, but only the larger interests appear to have capital for the installations desired. It is expected, however, that some substantial orders will be booked for installation in the spring.

There is very little movement in mining machinery. A few stamp mills, hoists, &c., are being placed, but of the numerous inquiries in the market the majority are of an indefinite nature and lead to nothing in the way of business.

Pumping machinery is still an important feature with local manufacturers, and while most of the business for some time has been small, some fairly important orders will probably be placed shortly. The gas engine manufacturers are getting the usual quota of orders from Australia, New Zealand, &c., which, with a fair local demand for stationary and marine engines, keep them well occupied. Local shops are doing considerable marine work, principally in the way of repairs, though it is reported that a large passenger steamer for Northern interests will be built here.

Specialized equipment for various manufacturing purposes is in better demand than for some time. Many local industries which have been under serious difficulties for the last two years, are commencing a new period of growth, and there is a general disposition in all lines to install machinery of improved types. This field, however, is highly diversified and the business consists of small and scattered orders.

The San Diego Gas & Electric Company is awaiting the delivery of a 60-ton crane, the order for which has been placed with the local office of Manning, Maxwell & Moore. Several cranes of the same type were recently ordered by the Southern Pacific Railroad.

The San Joaquin Light & Power Company has placed an order with the General Electric Company for a 2000-kw. Curtis turbine generator, to be installed at Bakersfield, Cal.

The Honolulu Land Company, Honolulu, T. H., has ordered a 1000-kw. generator from the General Electric Company. It will be operated by a Corliss engine.

The round house and machine shop of the Sierra Railway Company, Jamestown, Cal., were destroyed by fire October 6.

A large amount of new machinery is to be installed at the Port Kenyon salmon cannery on Eel River, Cal.

Air compressing equipment is being installed at many Government fog signal stations along the Pacific Coast, replacing the old steam signals. A large order for gas engines for this purpose has been placed with a local firm.

The Machinery Supply Company has been incorporated in San Francisco, with a capital stock of \$50,000, by H. C. Wybro, R. B. Elder and G. W. Hollister.

Plans have been made for a well equipped ordnance shop at Fort Winfield Scott, San Francisco, and contracts for the building will be let about the end of this month.

An addition to the Southern Pacific Machine Shop at Dunsmuir, Cal., has been completed, and a lot of new equipment is to be installed.

The town of Long Beach, Cal., is in the market for a sewage pumping plant with vertical Westinghouse motor.

The California Pipe & Steel Company has been incorporated at Bakersfield, Cal., with a capital of \$25,000, by L. P. Welch, T. P. Finn, J. E. Graves and R. A. Finn.

The town of Bakersfield, Cal., is in the market for a heavy steam roller and some other road machinery.

The Corona Rock Company, Corona, Cal., is preparing to install three large crushers. A new air compressor and several compressed air drills will also be added.

Plans are being drawn for another large dredger for the Natomas Consolidated of California, to be used on the Feather River division, near Oroville, Cal.

The town of Modesto, Cal., has taken figures on a number of turbine pumps, to be directly connected to steam turbines and electric motors, and including two large units for the water works.

A 250-hp. electric hoist is to be installed shortly at the Claremont shaft of the Goldfield Consolidated Mining Company, Goldfield, Nev.

The Atchison, Topeka & Santa Fe Railway System is installing a power plant at Barstow, Cal., for which all the necessary equipment has been contracted.

The Keller & Thompson Mfg. Company, Covina, Cal., manufacturers of irrigation appliances, is moving its plant to Los Angeles where it has purchased a site upon which it is erecting a plant consisting of a shop and foundry buildings.

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Milwaukee

MILWAUKEE, WIS., October 24, 1910.

The demand for power and electrical machinery, air compressors, pumps and apparatus auxiliary to these several lines, which unexpectedly fell off about the first of the month, shows signs of revival within three or four weeks at the most, as a number of enterprises are now under way that will call for considerable equipment of this character.

Inquiries from the mining districts are strong at present, as compared with the demand created by other industries, and this now keeps a number of plants going here that would otherwise find business very dull. Crushing and cement making machinery, which is largely handled by the same companies, also appears to be wanted, and the call for equipment to be installed in various sections of the United States as well as abroad gives considerable support to the local market.

Manufacturers of machinery for handling heavy parts or bulk material also report more work in prospect than there was a few weeks ago, and in some instances it has been necessary to increase the force of their engineering departments, particularly for estimating and drafting of preliminary plans.

The foundry trade in the vicinity of Milwaukee and the State at large is not what was anticipated for this season of the year, but all of the plants, both large and small, are reasonably busy. Some are even crowded with work, but this is due almost entirely to their having taken season contracts which frequently provide for their full capacities. A good deal of business in this line has been derived from manufacturers of motor cars, auto trucks, gasoline engines and traction machinery.

The A. L. Streich & Brother Company, wagon manufacturer, Oshkosh, Wis., will make some improvements in its plant, the work at present, however, being limited to a new four-story warehouse, 45 x 137 ft.

In connection with the plans for the new paper mill to be erected here by the Kieckhefer Box Company, as recently mentioned, it is stated that the new power plant provided for the present establishment will be sufficient to supply current to the mill. A large line of induction motors, paper making machinery, pumps, &c., will, however, be needed as soon as the project is in definite form.

Machine tool manufacturers of this city are reported to be figuring on some equipment for the new car shops to be built at Rockford, Ill., by the Rockford & Interurban Railway.

A line of motors is to be purchased in the near future for the new factory of the S. W. Miller Piano Company, Sheboygan, Wis.

The Wisconsin Bridge & Iron Company, Milwaukee, is building for the Hancock Consolidated Mining Company, Hancock, Mich., one of the largest steel frame shaft houses ever constructed, with bins to hold 2000 tons. The ultimate hoisting equipment of the shaft will equal 3000 tons daily and equipment is to be provided as the necessity arises. For handling the material as it comes from the shaft, three crushers of the Farrell type are being provided.

The purchase of an electric generating unit is being considered by the Thomas Coaster Toy Company, Sheboygan, Wis.

The four new digesters to be installed in the enlarged plant of the Wausau Sulphate Fibre Company at Mosinee, Wis., will be 9 x 26 ft. and made of a seamless welded steel. They have been ordered from Germany where apparatus of this character is said to have been perfected to a greater extent than in the United States.

The Nordberg Mfg. Company, Milwaukee, will build a motor-driven compressor for the Houghton Copper Company, Houghton, Mich. It is to have a capacity of 1500 cu. ft. of free air per min. and operate at 80 rev. per min.

The Muentner Mfg. Company, which was recently organized at Fond du Lac, Wis., by Otto R. Muentner, E. H. Cameron and Hugh Cameron, will establish a woodworking plant.

The city of Wausau, Wis., is letting contracts for enlarging its power and pumping plant and provision for new equipment will be made in the near future.

The American Hydraulic Air Compressor Company has been organized at Milwaukee with \$500,000 capital stock by Arthur C. Lingelbach, Alfred O. Girard and Robert C. Loewe. Preliminary plans for a large manufacturing plant are now in progress.

The pumping plant at North Fond du Lac, Wis., where the shops of the Soo Line are located, will probably be taken over by the village and considerably improved. An election on the question is to be held in the near future.

The Lindermann Box & Veneer Company, Eau Claire, Wis., is reported to have finally decided upon the construction of a steel and concrete building equipped for double the capacity of the one that burned last spring. Thoroughly

modern machinery driven by electric motors will be installed.

The Racine Mfg. Company, Racine, Wis., is increasing its capital stock from \$400,000 to \$600,000 to provide for the growth in the business and improvements in the plant.

The Filer & Stowell Company, Milwaukee, has installed the complete machinery for the new mill of the Wisconsin Lumber Company, Huttig, Ark., which is the most thoroughly modern of its kind of any thus far built in the Southwest.

The Stephenson Motor Car Company has removed its plant to South Milwaukee and will occupy buildings formerly used for a wrench factory which was located there.

A very complete line of woodworking machinery, blower system, &c., will be required for the Hardwood Products Company, Neenah, Wis., whose plans, however, have not yet been fully formulated.

The National Wagon Stock Company, of which Frank Mitchell, Racine, Wis., is president, is taking measures to rebuild the mill operated by that concern in the vicinity of Little Rock, Ark., which recently burned.

The plant of the Northern Hydro-Electric Company at Green Bay, Wis., at High Falls on the Peshtigo River will shortly be put in commercial operation supplying power to the street railroad and lighting systems of Green Bay, to Marinette and other cities and to a large number of industrial plants in that section of Wisconsin and Michigan.

The Fred Alden & Sons Company, Ladysmith, Wis., will rebuild the woodworking and enameling plant at Bruce that was destroyed by fire.

The Allis-Chalmers Company is the lowest bidder and promises the earliest delivery on a new pumping engine for the city of Lowell, Mass. In its design the product of the Milwaukee company is also the most massive by an average of about 50 tons.

The D. J. Murray Mfg. Company, Wausau, Wis., has been awarded the contract for the machinery equipment of the new sawmill to be built by the Wright Lumber Company, Merrill, Wis., in place of the one that burned some time ago. The power machinery of the old plant was principally saved and will again be put in service.

The Tomahawk Box Company, Tomahawk, Wis., has ordered new machinery from the Linderman Machine Company, Muskegon, Mich., by means of which its output will be considerably increased.

The Wisconsin Engine Company, Corliss, Wis., is preparing to install a 12,000,000 gal. pumping engine in the new Runyan water works station at Perth Amboy, N. J.

The new machine shops to be built by Hartman, Nelson & Zapfe, Green Bay, Wis., will probably not be erected until spring.

Electric power with motors for driving its machinery, is being installed by the Raleigh Mining Company, Buncomb, Wis.

The Consolidated Sheet Metal Works, Milwaukee, has been awarded the contract for all of the sheet metal to be used in the large new plant of the Phoenix Knitting Works of this city.

The mill at Schofield, Wis., which burned last summer, is to be rebuilt by the Brooks & Ross Lumber Company and furnished with thoroughly modern equipment. Electric power will probably be used.

C. H. Tegen, Manitowoc, Wis., has prepared plans for a garage and machine shop to be erected by Wm. Gabeman at that place.

A separate power plant with boilers and engine is to be erected in connection with the new two-story factory 40 x 56 ft., to be built by F. A. Dennett, Sheboygan, Wis., for the Lakeside Craft shops.

A foundry 60 x 150 ft., is to be erected, probably in the spring, by the Porcelain Enameling Association of America, Sheboygan, Wis.

The Laursen Automatic Pump Company, Eau Claire, Wis., has been incorporated with \$200,000 capital stock to manufacture a newly patented automatic pump. The officers of the company are L. A. Larsen, president; Edward Falbe, vice-president; Frank R. Farr, secretary; Amery J. Edminister, treasurer. The pump is the invention of Mr. Laursen who resides at Holcombe, Wis.

The Racine Mfg. Company, Racine, Wis., has increased its capital stock from \$400,000 to \$600,000.

The South

NASHVILLE, TENN., October 25, 1910.

It has been a source of frequent remark lately by manufacturers and dealers of this section that business conditions all through the Southern States are more favorable than the situation elsewhere in the country would appear to warrant; and the present state of the market, both for machinery and supplies, shows that the South has developed not only a large but also a relatively constant purchasing power. While

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there are few important lists to be figured on, a fairly steady stream of small orders continues to come in, particularly from the interior districts, where favorable crop conditions have loosened up considerable money for the improvement of the country shops, mills and factories in which local capital is invested.

Another factor of increasing value is the fact that the county, town and municipal bonds issued for various public utilities can be disposed of to much better advantage than a few years ago, owing to the good credit which they now have in the financial centers of the country. Funds made available in consequence of bond issues voted at the early fall elections are now being extensively utilized in the purchase of machinery and other equipment.

One thing which hampers the further development of Southern industries is the difficulty in securing skilled mechanics, foundrymen and factory or mill hands. This tends to widen the market for automatic and semiautomatic machinery, or tools that are at least very simple in their design and operation, which enable operators to get along with ordinary labor in place of men who have served a regular apprenticeship. This situation is one that should be taken into account by tool builders who seek an outlet for their product here.

W. C. Wing of the Kimberly-Wing Company, is in the market for an engine, generator, switchboard, &c., for a lighting system at Cedars, Miss. The headquarters of the company are at Neenah, Wis., its mill at Cedars being operated as a branch.

The Montgomery Show Case Company, Montgomery, Ala., is doubling the capacity of its plant by means of an addition and the installation of new machinery.

Plans are in course of preparation at Lockport, La., for a pumping plant and complete system of water distribution, including the erection of an elevated steel tank.

The Orleans Mfg. Company, New Orleans, La., is planning the erection of a five-story factory building the machinery in which will probably be driven by electric motors.

The Case-Fowler Company, whose headquarters are at Chattanooga, Tenn., is now making arrangements for the erection and equipment of a new timber cutting plant at Macon, Ga.

The authorities at Fort Meyers, Fla., are having plans and specifications drawn for a modern system of water works of moderate capacity.

While no definite plans appear as yet to have been decided upon, the plant of the Bering Mfg. Company, Pawnee, La., will probably be rebuilt in somewhat larger capacity and arranged for electric motor drive.

Machinery is now being installed in the new mill of W. C. Wood & Co., Collins, Miss., which was erected to replace one of inferior design and capacity that burned some months ago.

In consequence of the rapid industrial growth of Bogalusa, La., C. W. Goodyear, Jr., and others, have organized the Bogalusa Public Service Company to build a power plant and interurban railway system. For the generating stations steam turbine units will probably be provided, although it is possible that satisfactory arrangements will be made at the beginning for power from the plant of one of the large lumber companies in the vicinity.

The plant of the J. L. Judd Mfg. Company, Chattanooga, Tenn., recently burned and it is reported that rebuilding will be undertaken along the most modern lines.

The Southern Equipment Company, North Birmingham, Ala., is figuring on a proposition which involves a motor-driven centrifugal pump working against 150 lb. pressure and having a daily capacity of 1,000,000 gal., also electrical machinery and an air compressor.

The authorities at Germantown, Tenn., have under consideration the construction of a pumping plant and water works system.

The installation of machinery for municipal power and pumping service will probably be decided upon in the near future at Orlando, Fla. Preliminary plans and estimates are now being made.

Recommendations for improvements in the water supply system of North Birmingham, Ala., include an electric generating set, motor-driven pump, air compressor and auxiliary mechanical and electrical apparatus. No definite plans have, however, been decided upon.

The capacity of the Grayson-Nashville Company's box factory at Nashville, Tenn., is being doubled by the installation of new and improved machinery.

The Business Men's League, Montgomery, Ala., is in the midst of a very active campaign to secure new industries for that city. The location of a number of new plants there has been practically decided upon and others are reported to be in prospect. One of the inducements is the assurance of electric power at relatively low cost.

It is anticipated at Americus, Ga., that a bond issue will be voted there shortly to provide funds for the municipal power and lighting plant.

The woodworking shop of the Georgia Railway & Electric Company's car building and repair plant at Atlanta, Ga., will be remodeled. A new machine shop has just been completed and equipment provided.

The Specialty Mfg. Company, Chattanooga, Tenn., has been incorporated with \$40,000 capital stock. Incorporators: C. H. Royaly, G. C. Breeden, H. D. Huffaker and others.

The Foster Falls Power Company, Roanoke, Va., is constructing a concrete dam 30 ft. high by 1000 ft. long, across the New River at Foster Falls, Va., to develop hydroelectric power to the amount of 3500 to 4000 hp. The power so developed will be used principally in operating washers, pumps and other machinery at the different iron ore mining operations of the Virginia Iron, Coal & Coke Company in the vicinity of Foster Falls. The estimated cost of the construction of the dam, power house and installation of the necessary machinery at the power plant and the different mining operations referred to will amount to \$350,000.

The Central West

OMAHA, NEB., October 25, 1910.

Plants for the manufacture of cement and of machinery to be used for cement or clay products, pipe, tile and building material have recently been among the best customers of local dealers, and more business is in prospect from this class of trade. The shops that make a specialty of such equipment, which have been grouped in several centers of production like Waterloo, Iowa, are nearly all running to their capacity and where this is not required by current orders, manufacturing for stock is being undertaken, as there is every indication that the demand during the late winter and spring will be extremely heavy. Manufacturers of boxes, crates and other wooden or fibre packages, cans, pails, tins, &c., are also finding their facilities taxed and there will be considerable buying on this account both for plants already established and others that are to be started in the spring. Outside of these lines, trade is rather quiet.

The Ottumwa Railway & Light Company, Ottumwa, Iowa, is building a power plant 34 x 112 ft., of brick and concrete construction.

The Iowa Engineering Company, Clinton, Iowa, recently submitted the complete plans for a water works and sewerage system at Corydon, Iowa, the construction of which will be proceeded with as soon as funds from a bond issue are available for the purpose.

The Bridgeport Electric Light & Power Company has been organized at Bridgeport, Neb., to establish a public service plant.

The pumping station at Kearney, Neb., will be acquired by the city at a valuation of \$125,000 and improvements made in its equipment as soon as practicable.

Bonds for the municipal lighting system have been voted at Bladen, Neb.

Plans have been prepared by the Kokomo Consolidated Mining Company, Kokomo, Colo., for the installation of electric power and the operation of all of its machinery by means of electric motors.

H. K. Seeman, Denver, Colo., has installed on his property near Central City, Colo., an air compressor of the Norwalk Iron Works Company's build. Development work is to be proceeded with and more machinery installed later on as it is required.

The Denver Mining & Reduction Company is building a concentrating plant of 100 tons capacity at Blackhawk, Colo.

Thomas S. Shepperd, Denver, Colo., has been awarded the contract for the complete water works system at Lowell, Wyo.

The Tintic Mines Company has ordered from the Chicago Pneumatic Tool Company, through the F. C. Richmond Machinery Company, Salt Lake City, Utah, a tandem compound gasoline-driven air compressor. This is the first machine of the type to be installed in the famous Tintic mining district of Utah.

M. S. Browning, Salt Lake City, Utah, has organized the Blacksmith Fork Light & Power Company, which will undertake the construction of a hydro-electric plant on Bear River. No arrangement for the machinery required has as yet been made.

It is reported from Chadron, Neb., that the plant of the Chadron Electric Light & Power Company, which has passed under the control of new interests, will be extensively remodeled and increased in capacity.

An engineer has been engaged to prepare plans for the proposed water works system at Ephraim, Utah, and the purchase of equipment may be taken up about November 15.

The Commercial Club, Murray, Utah, is interested in a

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proposition to establish a can manufacturing plant at that place.

Additional machinery will be provided this fall or early in the winter for the property of the Big Indian Mining Company, Georgetown, Colo.

Besides the machinery in its concentrating mill, which is electrically operated, the Silver King Coalition Company, Park City, Utah, has installed a Worthington four-stage centrifugal pump, direct driven from a motor supplied by the General Electric Company, Schenectady, N. Y. An electric haulage system is also being completed, and the equipment in the machine shop will be arranged for motor drive. This is a good illustration of modern power tendencies at the plants of the large mining companies.

The Iowa Falls Gas Company, Iowa Falls, Iowa, has purchased the plant of the Iowa Gas Company, which will be improved and extended.

The Blue River Power Company has been organized to develop the unused power of the Rocky Ford Milling & Power Company at its plant northwest of Manhattan, Kan. The company has installed a hydroelectric plant which delivers its current to the Manhattan Light, Ice & Power Company, which in turn distributes it over the town of Manhattan. All necessary equipment has been purchased.

The Iowa Central Railway Company is erecting an addition to its machine shop at Fort Dodge, Iowa, which will be equipped with tools transferred from the roundhouse.

The Hawkins Mfg. Company has located a plant at Des Moines, Iowa, for the manufacture of the Corn King silo.

The Fremont, Neb., electric light and gas plant will be improved at an expenditure of \$150,000. Improvements will consist of new buildings and equipment and the laying of new mains.

The Bittendorf Tool Company, Davenport, Iowa, has been incorporated with a capital stock of \$10,000. Until the stated annual election on the second Monday in January, the following parties are to be the officers: president, P. W. Reck; secretary, W. O. Calvert; treasurer, J. E. Brownlee. The company will engage in the manufacturing of tools.

The Northwest

MINNEAPOLIS, MINN., October 24, 1910.

The coming spring will witness a greater degree of activity in the construction of electric traction lines and the equipment of generating stations used both for railroad and local power and lighting service, than has ever been known in this part of the country, as numerous plans are now under way which will culminate at that time. Inquiries for the machinery needed in these various projects are already being put out and there is considerable estimating that will be needed to be done during the winter months.

Most of the shops and factories of the Northwest are fairly busy, but few of them find it necessary to add to their present equipment. Orders for machinery to be used in connection with new enterprises, however, are now being taken up and representatives of the leading manufacturers in these lines have recently received instructions for deliveries on contracts, the execution of which was temporarily delayed at the beginning of the fall season until it could be learned what the tendencies were for the next few months.

Apart from the conditions above noted the market is without any features of interest. At the various centers of distribution there is a steady run of business, but it is mostly of a routine character and covers small orders of material needed for immediate use.

It has been practically decided at Chisholm, Minn., to expend \$80,000 for improvements to the water works system, including the erection of a new pumping station, purchase of machinery and the installation of a filtration plant.

Equipment will be required by or before spring for a hydro-electric plant of 750 kw., to be erected at a point in Northern Minnesota by the National Power & Development Company, whose headquarters are in the Torrey Building at Duluth, Minn. A pulp and paper mill is also to be built and furnished with electric current from the power plant.

The Cloquet Electric Company, Cloquet, Minn., is installing new machinery in its plant.

The purchasing of additional pumping machinery is under consideration by the authorities at Owatonna, Minn.

The Water & Light Commission, Fairmont, Minn., is about to let contract for a gas producer and engine of 300 hp., an alternating current generator, three-phase, 2300 volts, switchboard, motor-driven pump of 1,000,000 gals. daily capacity and triplex power and rotary pumps of designs approved by the Underwriters Associations.

The Capital City Lumber Company, St. Paul, Minn., will build a sash and door factory at Midway, Minn.

The construction of a municipal pumping plant will probably be undertaken by or before spring at Baltic, S. D.

The East Coeur d'Alene Mining Company has organized to operate in the vicinity of Mullan, Idaho, and will install equipment for opening up a new mine there.

The Rock Rose Mining & Milling Company, located at Grass Valley near Helena, Mont., will install a pump for de-watering its main shaft and other machinery is to be provided as development work is carried further.

Work has been commenced on a new sampling plant at Washoe for the Anaconda Copper Mining Company, Butte, Mont., to replace the one that burned.

The Western Mfg. & Building Company, Aberdeen, S. D., has been incorporated with \$100,000 capital stock for the manufacture of sashes, doors, moldings and interior finishings. The company is now considering the erection of a factory which it expects to have ready for occupancy by the first of the year. The officers of the company are: L. L. Cummings, president and W. H. Prendergast, secretary.

The Southwest

KANSAS CITY, MO., October 24, 1910.

Scattered buying in behalf of Southwestern railroads and interurban traction lines for motive power, shop and other mechanical equipment, as well as rolling stock and its various accessories, now stands in the aggregate for a very considerable volume of business, and has come to be one of the controlling features of the present situation. This business, however, needs to be very closely followed up at the headquarters of the various roads, for, while the material is in most every instance destined for interior points, very little can be learned at any of these points in relation to impending purchases until after the deals have been practically closed.

The activity in bridge building and other structural work, which has been responsible for heavy expenditures within the past few months, was also but a forerunner of what will be required for the immediate future. In connection with this, sales of fabricators' and contractors' outfits, including air compressors and pneumatic tools, have attained noteworthy proportions.

A great deal of miscellaneous machinery and equipment has been purchased all through the season for shipment to points in Mexico, and inquiries now in the hands of sales agents and dealers indicate that there is to be no lessening of this demand, which is rapidly growing in importance as a factor in the industrial welfare of the Southwest.

With local manufacturers, including those of the metal working trades, the situation is regarded as generally satisfactory, taking into consideration the conditions reported from the East. Enough work is now on hand to keep shops going nearly if not quite to their normal capacities, and there appears to be no difficulty in finding funds for improvements or extensions in any department as they are needed. All are, however, proceeding along very conservative lines, and the buying now being done in behalf of local plants is for present rather than future requirements.

The Mexico, Santa Fé & Perry Traction Company, Mexico, Mo., has decided upon the erection of a new power house, work upon which is to be started during the late winter or early spring. It will probably be located at Santa Fé, Mo., and equipped with electric generators driven by gas engines. The company's repair shops are also being located at that point.

Additions involving the ultimate purchase of considerable machinery will need to be made to the power system of the Atchison Railway, Light & Power Company, Atchison, Kan., upon completion of an interurban railroad system, the preliminary work on which will be done this fall.

The Wichita Railroad & Light Company, Wichita, Kan., has awarded contracts for the erection of a repair shop, 62 x 300 ft., which will be of steel frame construction. This is designed on the unit system, so as to provide for making future extensions without any necessity for remodeling the plant.

The Missouri Valley Bridge & Iron Company, Leavenworth, Kan., has been awarded the contract for a 400-ft. steel bridge at Camp Verde, Ariz.

The Helena Rock Company has been organized at Helena, Ark., to operate stone quarries at Heber, Ark. J. B. Miles, Jr., is general manager. Considerable machinery will need to be at once provided for.

H. M. Davis and F. M. Flannagan, Stanton, Tex., are reorganizing the Whitehill Mining Company and will erect a 50-ton ore reduction plant on the property under their control at Paradise, Ariz.

The Butler Mfg. Company, Kansas City, has completed plans for the construction and equipment of a sheet metal plant.

The Penn Bridge Company, through its representatives at

THE MACHINERY MARKETS

Dallas, Texas, has taken the contract for a 50,000-gal. steel tank and tower to be erected for the new water works system at Russell, Kan.

An event of considerable interest in this section is the starting up of the Wisconsin Lumber Company's new timber cutting plant at Huttig, Ark., the machinery in which is of the most modern design. The power house equipment includes boilers furnished by the Casey & Hedges Company, Chattanooga, Tenn.; an engine from the Erie City Iron Works, Erie, Pa., and a Westinghouse electric generator.

The Griffin Wheel Company has awarded the contract for a new office building in connection with its Kansas City branch.

El Tajo Mining Company, San Sebastian Jalisco, Mexico, has ordered a sectionalized power plant, including two generators of 100 kw. capacity, from the Westinghouse Electric & Mfg. Company, driven by Pelton water wheels. The machinery in the company's ore reduction mill will be operated by means of Westinghouse induction motors.

The Vernon Telephone, Light & Power Company, Vernon, Texas, is contemplating changes in its power plant which involve the addition of machinery to double the present capacity.

The installation of a 2,000,000-gal. turbine pump is being planned for the water works system at Salina, Kan., which is owned by a private corporation.

It is reported that the Southern Pacific Railway will immediately provide facilities to replace those afforded at Tucson, Ariz., which recently burned.

The Lufkin Foundry & Machine Company, Lufkin, Texas, is among the bidders for the equipment of the new steel frame mill to be erected at Camden, Texas, by W. T. Carter & Brother of Houston, Texas. Tenders of machinery have also been made by the McDonough Mfg. Company, Eau Claire, Wis.; the Diamond Iron Works, Minneapolis, Minn.; the Allis-Chalmers Company and the Filer & Stowell Company, Milwaukee, Wis.

A bond issue has been voted at Lufkin, Texas, to provide funds for the construction of a modern pumping plant and water works system.

A new boiler and engine have been installed in the plant of the Davidson-Mattox Company, Osceola, Ark.

An electric pumping plant is being installed at a depth of 1000 ft. in the mine of the Arizona Central Copper Company, Dewey, Ariz. Development work will be steadily pushed and additional machinery is likely to be required before spring.

The Mena Box & Mfg. Company, Mena, Ark., has been doing a heavy business this season and is adding to its equipment. Further machinery will be installed as needed.

A boiler with oil burning furnace, Corliss engine and an electric generator of 150 kw. are to be added to the municipal plant at McPherson, Kan., which is now equipped with General Electric alternators and Ball and Buckeye engines. The boilers at present installed were furnished by the Erie City Iron Works, Erie, Pa.

A large stove factory is being erected near Camden, Ark., by the American Land, Timber & Stave Company. Most of the machinery required will be removed from Onalaska.

Bonds to provide for the water works system have been voted at Mannsville, Okla.

A concentrating mill is being completed and a new hoisting unit installed at the main shaft of the Mildred Gold Mining Company, Congress, Ariz. The development work that is now to be undertaken will call later on for the installation of some additional machinery.

Machinery will be required shortly for a large hydro-electric plant which the Great Western Power Company, Tucson, Ariz., is constructing at Sabine Canyon. The equipment may have already been purchased.

The Oklahoma Iron Works, Tulsa, Okla., advises that its recent loss by fire was confined to its foundry building and patterns and does not exceed \$2500.

The A. H. Davis gin at Crescent, Okla., was destroyed by fire from an unknown cause October 13.

The five-stand cotton gin belonging to Henry Kimball, situated at Elmer, Okla., was destroyed by fire October 18. The plant was valued at \$12,000, fully covered by insurance. The gin will be rebuilt.

The Katy Mill & Elevator Company, Caddo, Okla., has been incorporated. Capital stock, \$7500. Incorporators are J. A. Hartzog, D. M. Wilson, C. C. Tarver and others.

The Tulsa Boiler & Mfg. Company, Tulsa, Okla., has practically completed the construction of its new plant. The company, formerly operated under the name of the Robinson Boiler & Mfg. Company, Robinson, Ill., but was induced to remove to Tulsa through the efforts of the Commercial Club, which donated a 10-acre site and a cash bonus of \$15,000. The plant consists of a boiler and tank shop and machine and forge shop, and all necessary equipment has been provided for. The company will build all kinds of boilers, tanks, stills, stacks and general steel plate construction.

North Pacific Coast

TACOMA, WASH., October 21, 1910.

So much of the buying being done at present is in behalf of large construction companies that anything in the nature of equipment for such purposes, including contractors' outfits, sells to excellent advantage; and, for at least some months, this will constitute one of the principal dependencies of the market. In all lines of production, however, there continues to be a steady, if rather, gradual gain, and the unfavorable labor conditions farther south are bringing to the principal cities of the north coast considerable work which would ordinarily be outside of their province.

The Tacoma Ornamental Iron Works, Tacoma, Wash., which makes a specialty of bronze parts as well as iron, steel and wire work of various descriptions, has taken a good many important contracts during the current year. This company acts in the same capacity as structural engineers and is prepared to carry through every detail of the contracts which it undertakes. Work on a new plant at Union and Center streets is now under way and the completion of this will give the concern much greater facilities.

The West Coast Steel Works, Tacoma, Wash., whose organization was reported some time ago, is featuring in its sales contractors' equipment of various kinds as well as structural steel and the standard line of bolts, rivets, &c., which it manufactures. An engineering staff is maintained to handle all structural problems. The officers of the company are on Pacific avenue and Twenty-first street, Tacoma. J. R. Turner is president and manager, N. W. Graybill is vice-president and W. H. Reid, secretary and treasurer.

It is stated that the Washington Iron Works, Seattle, has taken a number of contracts lately for complete sawmill equipments and other woodworking machinery to be shipped to the Far East, including the island of Java.

The Three Pines Lumber Company is planning the construction of a modern mill at Three Pines, Ore.

It will not be necessary for the Complex Ore Company, Victoria, B. C., whose plans for a zinc smelter at Nelson, B. C., were recently mentioned, to build its own power plant as the city of Nelson has leased its old electric generating station for the purpose. Direct current will be used in the operation of the works.

The Fred W. Wolf Company of Chicago, Ill., which maintains a district sale office in Seattle at 914 First avenue South, now has a large number of installations to its credit in this territory of the engine-driven refrigerating machines which it manufactures. A full stock of fittings is carried at the Seattle branch.

Plans are now being prepared for a new municipal pumping station for service at Lincoln Heights, Spokane, Wash. A motor-driven centrifugal pump with capacity of 3,000,000 gal. daily is to be installed.

The Garwood Electric Company of Garwood, N. J., whose projects have come to be well known in this territory, are represented on the north coast by the Montilus Price Company, Seattle, Wash.

H. W. Gocker of 910 Twenty-fourth avenue, South, is the moving spirit in the incorporation of a new woodworking establishment, known as the Fulton Machine Works, Seattle, the full plans of which have not yet been made public.

The Ballard Drop Forge Company, Ballard, Wash., in addition to the projects which its name implies, is manufacturing steel bands for large wooden pipes and tanks; also bolts, nuts, &c. In these varied lines business has been good all through the season.

Sixty additional stamps for ore crushing are to be installed in the spring by the Alaska Perseverance Gold Mining Company, Juneau, Alaska.

The construction of a sash and door factory, dry kiln, furniture factory and shingle mill will follow the completion of a large sawmill now being built by the Columbia Valley Lumber Company at Wauna, Wash. The headquarters of the company are in the Spalding Building, Portland, Ore.

It is reported from Portland Ore., that the Hydro Patent Power Company has been incorporated by Norman R. Smith, Frank Becker and C. M. Idleman to manufacture and sell hydroelectric machinery. Shops are to be built in due course in Portland or vicinity.

A new boiler and engine have been added to the municipal plant at Forest Grove, Ore., which will supply current for a commercial day load, the power to be utilized in local industries.

The Bellingham Mfg. Company will build a woodworking plant and sawmill at Bellingham, Wash.

Gyratory rock breakers, Chilian mills, tube mills, classifiers, pumps, filters, tanks, &c., will be required for the new 1000-ton ore reduction and cyanide plant to be built by the Northwestern Power & Reduction Company at Republic, Wash.

THE MACHINERY MARKETS

North Texas

DALLAS, TEXAS, October 21, 1910.

With the opening of the fall season indications are that there will be great activity in all lines of industry. The establishment of new factories in various sections of this State and the adjoining States of Oklahoma and Arkansas assures a healthy trade in all kinds of machinery and equipment. One can hardly glance over a paper from any of the smaller towns and cities of north Texas without observing items regarding the erection of a factory of some character, the voting of bonds for some public improvement or some important project now under way or soon to be started.

One of the main reasons for this great activity is the fact that farmers are securing more money for their crops this year than ever before. Owing to the extremely dry weather which has prevailed here for the past two years crops are not as good as they have been, but this is offset by the prices being received. When farmers have money business men have confidence and are willing to invest their money in all kinds of enterprises.

One of the biggest local improvements on which work will start probably about November 1 is a concrete viaduct to connect the main city of Dallas with that portion lying across the Trinity River. Contract for its construction was recently awarded to Corrigan, Lee & Halpin of Kansas City. The structure is to be nearly 6000 ft. in length, 40 ft. wide and built entirely of reinforced concrete.

Another improvement is the construction of a large reservoir as an adjunct to the local water works system. Work on a large dam has been under way for months, and at a recent meeting of the Board of Commissioners of the city Secretary Winslett was authorized to advertise for bids for the construction of a pumping station. The building will only cost about \$30,000, but as soon as work on this is under way the city will be in the market for boilers, engines, cranes, pipe, &c.

Work on the erection of a 20-story hotel building is to begin here about December 1. August A. Busch of St. Louis is the leading capitalist behind the enterprise. It is to be of steel construction and will cost \$1,000,000.

The charter of the Pecos & Toyah Lake Irrigation Company, Pecos, Texas, has been filed for record with the Secretary of State. This company has a capital stock of \$1,500,000 and owns 30,984 acres of land. Of this land 22,000 acres is to be irrigated and placed in cultivation and 8738 acres is to be used for reservoir purposes. The directors of the company are F. H. Dobbins, Charles A. Loomis and L. H. Baker of Kansas City, and Frederick W. Taylor of Lincoln, Neb. The company is now in the market for pumping machinery and pipe of all kinds and sizes. It is proposed to build a ditch 65 miles long and pump water from the Pecos River for the irrigation of the land to be placed on the market.

Work has been begun on the building to be used by the Taylor Gas Company and it will soon be ready for the installing of machinery.

At a special election held recently at Denison a bond issue of \$50,000 was authorized for water works improvement. Additional pumping capacity will be added and the mains extended.

Bridge bonds in the sum of \$50,000 have been voted by McCollough County, Texas. Four bridges in different sections of that county are to be constructed. Those interested should address the County Judge at Brady, Texas.

President L. W. Chase of the Taylor Waterworks Company, Taylor, is having plans drawn for improvements to be made to the company's system. Another large reservoir is to be constructed and additional pumps are to be installed.

On November 10 a special election is to be held at Terrell, Texas, to vote on the question of issuing bonds for the extension of the sewage system of that place.

Bartlett, Texas, is erecting a pumping plant and power house near the artesian well recently drilled, and a double pumping plant is to be installed. One plant will be run by electricity and a 20-hp. gasoline engine will be installed. An air compressor is also to be installed with the view of increasing the capacity of the well.

Ground has been broken at Dallas for the erection of a five-story building to be used by the Lincoln Paint & Color Company as a paint factory, which is to be equipped with modern paint making machinery, and, it is said, will be the first exclusive paint factory in Texas.

Indications are that by the end of the year active work on the construction of an interurban railroad line from Dallas to Terrell, Texas, a distance of 33 miles, will be well under way. A good deal of preliminary work has already been done and the company will soon be in the market for power plant, machinery, ties and rolling stock equipment. C. L. Wakefield, Dallas, is secretary of the new company.

The Texas City Land Company, Texas City, Texas, is contemplating the enlargement of its electric light plant.

H. L. Dales' (Burnett, Texas) cotton gin, one of the largest in the State, was destroyed by fire October 14.

The cotton gin owned by the McKinney Cotton Oil Mill Company, McKinney, Texas, was destroyed by fire October 15.

The Texas Sugar Refining Company, San Antonio, Texas, announces that \$1,000,000 of the \$1,800,000 capital stock of the company has been subscribed, and contracts for the designing of the plant and erection of the work have been entered into. The plans of the company contemplate the erection at Texas City, on Galveston Bay, of one of the largest independent sugar refineries in the country.

The stockholders of the Clarksville Ice & Light Company, Clarksville, Texas, are arranging for the reorganization of the company with a view to rebuilding the plant recently destroyed by fire. It is contemplated to build a plant with double the capacity of the old one. Work will begin in the near future on the buildings and orders will be placed for the machinery for both plants.

The plant of the Airblast Gin Company, Baird, Texas, was burned October 18.

The Laferia Sugar Company, Brownville, Texas, a recently organized company with a capital stock of \$2,000,000, which owns 6000 acres of land near Laferia, Texas, is having plans drawn for a 3000-ton capacity sugar house in units of 1000 tons each, costing \$750,000. One unit will be built in the near future. Several St. Louis capitalists are interested in the new enterprise.

Government Purchases

WASHINGTON, D. C., October 24, 1910.

The Paymaster-General, Navy Department, Washington, will open bids November 1, under schedule 2994, for two radial drills, and under schedule 2993, for one geared head motor-driven lathe.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids November 15, for two flat turret lathes, schedule 2992; 50 pneumatic hammers, schedule 3011.

The Isthmian Canal Commission, Washington, opened bids October 14 as follows:

Class 1.—One condenser with air and circulating pump—Bidder 1, Alberger Condenser Company, New York, \$2750; 10, M. T. Davidson Company, Brooklyn, N. Y., \$3150; 23, Manning, Maxwell & Moore, New York, \$2800; 37, Platt Iron Works Company, Dayton, Ohio, \$2600 and \$2800; 53, Vermilye & Power, New York, \$2675; 55, Wheeler Condenser & Engineering Company, Carteret, N. J., \$2745; 56, C. H. Wheeler Mfg. Company, Philadelphia, Pa., \$2348; 58, Williamson Brothers, Philadelphia, Pa., \$2998; 59, H. R. Worthington, New York, \$2346 and \$2086.

Class 2.—One engine lathe and one driving motor—Bidder 16, Garvin Machine Company, New York, \$1980; 31, Niles-Bement-Pond Company, \$2152 and \$1760; 52, Vandyke-Churchill Company, New York, \$1897.

Class 3.—One valve reseating machine—Bidder 12, Drew Machinery Agency, Manchester, N. H., \$125 and \$137.50; 15, Fox Brothers & Co., New York, \$125 and \$89; 17, R. W. Geldart, New York, \$125; 22, Manhattan Supply Company, New York, \$135; 23, Manning, Maxwell & Moore, New York, \$125; 24, Material Supply Company, Oradell, N. J., \$125; 41, H. A. Rogers Company, New York, \$125; 43, R. B. Sherman, New York, \$125; 50, Universal Trading Company, New York, \$125; 53, Vermilye & Power, New York, \$125.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids October 18, as follows:

Schedule 2931, class 61.—One electrical driven concrete mixer—Bidder 10, W. E. Austin Machinery Company, Atlanta, Ga., \$1425 and \$1200; 74, Milwaukee Concrete Mixer & Machinery Company, Milwaukee, Wis., \$1185; 86, Municipal Engineering & Construction Company, Chicago, Ill., \$1200; 98, Lakewood Metal Company, Baltimore, Md., \$122; 103, J. J. Shannon & Son, Philadelphia, Pa., informal, \$106; Standard Scale & Supply Company, \$1070 and \$890.

Class 71.—One No. 4 plain high power milling machine—Bidder 17, Brown & Sharpe Mfg. Company, Providence, R. I., \$1777.50, \$1979.50, \$1950 and \$1982; 30, Cincinnati Milling Machine Company, Cincinnati, Ohio, \$2059.85; 70, James F. Kent, Baltimore, Md., \$2060; 80, Manning, Maxwell & Moore, New York, \$2011; 80, Niles-Bement-Pond Company, New York, \$1620.

The following bids were opened by the Depot Quartermaster, New York City, under schedule No. 134, October 14, for one pump, Worthington or equal duplex, 10 x 12 x 12 in., extra heavy water end with piston rod in two sections, steam end steel and water end bronze:

Bidder 1, Buffalo Steam Pump Company, New York City, \$520 each; 2, The Griscom-Spencer Company, New York City, \$754.21 each; 3, Manning, Maxwell & Moore, New York City, \$770.92 each; 4, Frank McSwegan & Sons, New York City, \$788.59 each; 5, Vermilye & Power, New York City, \$759 each; 6, Warren Steam Pump Company, New York City, \$800 each; 7, Henry R. Worthington, New York City, \$550 each.

The Sloss-Sheffield Steel & Iron Company's Lady Ensley Furnace, at Sheffield, Ala., was blown out for repairs October 15.

Obituary

CHARLES H. ZUG

Charles H. Zug, president of the Zug Iron & Steel Company, Pittsburgh, died suddenly October 21, aged 78 years, from an abscess on the brain. He was born in Carlisle, Pa., but had lived in Pittsburgh from his boyhood. He was the only son of Christopher Zug, founder of the old firm of Graff, Lindsay & Co., which became Zug, Lindsay & Co. in 1844, and Zug & Painter in 1854. After the last named firm dissolved, in 1864, the elder Zug organized the firm of Zug & Co., which was changed to the Zug Iron & Steel Company in 1906.

Mr. Zug received his early education in Pittsburgh,



CHARLES HENRY ZUG.

after which he took a course at Brown University, then entered in business with his father, who died in 1902. For many years prior to his father's death, Charles was the active head of the business. He was deeply interested in benevolent and religious work. He leaves a widow, three daughters and one son, Prof. George Breed Zug of Chicago University.

FRANCIS WILLIAM CLEMSON, Woburn, Mass., head of the Clemson Knife Company of that place, died suddenly, October 18, while hunting in the Maine woods. He was born in Arlington, Mass., 62 years ago, the son of William Clemson, the founder of the firm of Woodrough & Clemson, succeeded by Henshaw, Woodrough & Clemson, manufacturers of saws and belt knives. The son learned his trade in his father's works and for 35 years, until his death, was identified with the trade, including the establishment of the Clemson Knife Company. He leaves a son and two daughters.

PETER GENDRON, vice-president of the Gendron Wheel Company, Toledo, Ohio, died October 23, aged 66. He was the inventor of the original iron vehicle wheel upon which he secured 72 patents. He was born in Coaticook, Province of Quebec, Canada. The works at Toledo are among the most important in that city.

JOHN E. DOAK, vice-president and general manager of the Doak Gas Engine Company of San Francisco and Oakland, Cal., died October 5, aged 47 years. The business of the company will continue undisturbed, Wm. Letts Oliver being president.

CLIFFORD H. DOAN, special representative of the American Tool Works Company, Cincinnati, Ohio, and brother of J. B. Doan, vice-president and general manager of that company, died October 22, after a long illness at Christ's Hospital, Cincinnati, aged 37 years.

The Youngstown Sheet & Tube Company's Relief Plan

President James A. Campbell, of the Youngstown Sheet & Tube Company, Youngstown, Ohio, after giving the subject of accident relief his earnest consideration, placed before the stockholders at the last annual meeting an outline of his plan, which met with their hearty approval.

This relief is a purely voluntary one, and the money needed will be furnished entirely by the company, without any contribution whatsoever from the workmen. The purpose of the plan is to insure to employees of every department definite and adequate compensation for injuries resulting from accidents occurring to them while engaged in the performance of their duties, and also to provide compensation to the widows and children and their relatives who may be dependent upon any employee whose death results from such accident.

The benefits provided will be paid regardless of legal liability on the part of the company, it being the policy of the Youngstown Sheet & Tube Company to render every assistance possible to its employees, especially at a time when it is most needed, and to see that they get promptly every dollar that they are entitled to under this plan and are not subjected to the delays, uncertainties, and costs of litigation, attorney fees, and other needless expenses, which quite frequently, under the present method of settlement, leaves very little, if anything, for the injured employee. It will not be necessary, the company states, for employees to retain the services of attorneys or anyone else to collect the amount of money that will be paid them under this plan of relief, the company being desirous of dealing directly with its workmen, and making prompt settlement of all claims.

The Westinghouse Foundries.—Press reports are premature that the various Westinghouse interests at Pittsburgh will concentrate their entire foundry operations at Trafford City, Pa., and build one or more large foundries at that place. It is stated officially that while this has been under consideration no definite decision has yet been reached. At present the Westinghouse Electric & Mfg. Company and the Westinghouse Machine Company have most of their castings made at Trafford City, but the Westinghouse Electric & Mfg. Company also maintains foundries on the North Side of Pittsburgh and in Cleveland, Ohio. Should it be decided to concentrate all foundry operations at Trafford City, the foundries now operated at East Pittsburgh, North Side of Pittsburgh, and Cleveland would be abandoned, and the greater part of the equipment moved to Trafford City.

The country's exports for the month of September, according to the report of the Department of Commerce and Labor recently issued, exceeded the imports by \$51,500,000, the largest credit balance which has been shown for the month of September in any year since 1900. The exports, amounting to more than \$168,800,000, were the largest ever recorded in the month of September, while the imports were smaller than for the same month last year. For the nine months ended September 30 our foreign trade now shows a credit balance of a little more than \$50,500,000, while at the end of the previous month there had been a small adverse balance.

The American Railway Association committee on relations between railroads, in its statement of car surpluses and shortages as of October 12, reports a decrease in surplus of 8,734 cars, bringing the total down to 33,735, while the shortage was 20,419, making a net surplus of 13,316 cars.

The Oliver Chilled Plow Works Doubling Its Capacity

The Oliver Chilled Plow Works, South Bend, Ind., has improvements under construction or recently completed which will double the capacity of its plant. An extension has been made to the foundry building, 130 x 350 ft., making the foundry 240 x 818 ft., with an L 110 x 130 ft., with a total floor space of 210,620 sq. ft. A cupola for gray iron has been added, making a total of four, all of which have been moved into a three-story charging building to which the pig iron and coke are now brought by an electric industrial railway and the molten iron then conveyed to different parts of foundry by the same method. Two additional furnaces and a third stack have been installed in the part of the foundry devoted to malleable castings, making six furnaces and three stacks in all.

A large addition has been made to the forge shop and a new tempering room erected, greatly enlarging the capacity of those two departments. To relieve the congested condition in the assembling department, a three-story assembling building is being erected in U shape, the total size of which is 85 x 720 ft., three stories, with a total floor space of 138,600 sq. ft. All of these additions, with the exception of the new charging room for the gray iron cupolas and the new assembly building, are in use at the present time but the remaining new work will be completed by January 1 and the equipment installed.

The Pacific Hardware & Steel Company's Improvements

The Pacific Hardware & Steel Company, Portland, Ore., has completed the construction of its new iron warehouse, 100 x 200 ft., and its wholesale hardware jobbing house, 132 x 200 ft., four stories and basement, will be completed by December 1. The former is equipped with electric traveling cranes and modern conveniences for the handling of heavy material, while the latter is provided with hydraulic lifts, elevators and dumb waiters to facilitate the receiving and delivery of goods. The buildings have 300 ft. of track-
age with facilities for loading six cars at one time.

The buildings are adjacent to the company's rolling mill which is in regular operation. The company also has a sash weight foundry for the manufacture of sash weights for its trade. Stock for the iron warehouse is now arriving. The steamer Aztec, with 3000 tons of general hardware, is due to arrive in Portland November 5 to 10. This steamer sailed from New York and Philadelphia with a large portion of the opening stock, which it is anticipated will be in shape by December 15. The Portland branch will hereafter be the Northwest headquarters of the company and will be under the charge of A. C. Callan assisted by G. Rueger, formerly manager of the company's Seattle branch, which has been discontinued.

A Remarkable Range for Wireless Telegraphy.—On a recent voyage from Bombay to England a message was received at the wireless station at the North Foreland, England, from the tramp steamer Nonsuch which is the first to be fitted with wireless apparatus. At the time the message was sent the steamer was 15 miles south of Cape de Gaa at the southwest corner of Spain, a position about 940 nautical miles from North Foreland. This distance across the obstacle of the entire countries of France and Spain and the Pyrenees Mountains is a remarkable range for wireless from a ship. The owners of the ship also received a message through the station at Ushant sent from the ship when off Cape Roca near Lisbon, Portugal, a distance of 610 nautical miles.

The Buffalo Coke Rate Hearing.—At a hearing before Allan P. Matthews, examiner for the Interstate Commerce Commission, at Buffalo, October 24, the taking of testimony in the complaint of the iron and steel companies of the Buffalo district against the railroad companies operating between the Connellsville coke fields and Buffalo and the Niagara frontier concerning the increase in the freight rate on coke between those districts was proceeded with. The amended complaint states that from 1901 to 1902 the rate from Connellsville to Buffalo was \$1.50. It was then raised to \$1.60, at which figure it remained until 1907, when it was advanced to \$1.65, that rate continuing until April of this year, when it was further advanced to \$1.85. The proceeding was begun at the time the railroads announced this last increase, it being claimed by the iron and steel interests of Buffalo that the new rate is excessive and unreasonable and a discrimination in favor of the Pittsburgh and Gary districts. The rate from Connellsville to Pittsburgh is 75 cents, and to Gary \$2.60 per ton, or 4.6 mills per ton mile to Gary against 5 mills to Buffalo. The testimony introduced by the railroads in defense of the increased rate was to prove that it was necessary to equalize the rates from the Connellsville district to eastern Pennsylvania furnaces, that had demanded a lower rate, and the raising of the Buffalo rate was deemed the best and fairest solution of the matter. Further hearing of the case was postponed until November 7, to take place before the same commission at Buffalo.

Sunday Labor at Iron and Steel Works.—President E. H. Gary of the American Iron and Steel Institute has appointed the following committee to investigate the question of seven-day labor in continuous processes in the iron and steel industry: E. A. S. Clarke, president Lackawanna Steel Company; William B. Schiller, president National Tube Company; F. W. Wood, president Maryland Steel Company; George G. Crawford, president Tennessee Coal, Iron & Railroad Company; J. A. Campbell, president Youngstown Sheet & Tube Company. The appointment of this committee is in pursuance of a resolution passed at the meeting of the Institute held in New York, May 27, 1910, at which a paper was read by William B. Dickson, first vice-president of the United States Steel Corporation, advocating the elimination as far as possible of Sunday labor at iron and steel works, and such an arrangement of work as would give employees one day of rest in each week.

The Lewis Foundry & Machine Company, Groveton, Pa., near Pittsburgh, is completing a five-stand 9-in. roll train for rolling rounds, squares, flats, &c.; two vertical shears driven by General Electric Company's motors to cut 2½-in. material, and two small cropping shears, also driven by General Electric motors, for shipment to the Western Steel Corporation, Seattle, Wash. The mill will be shipped early in November, and the shears in the latter part of that month. The Lewis Company is fairly busy in its roll department, and has some good business booked for even depth chilled rolls, which are a specialty of the company.

The National Society for the Promotion of Industrial Education will hold its fourth annual convention at Boston, Mass., November 17 to 19. The day sessions on Thursday will be held at Perkins Hall, 264 Boylston street; the day sessions on Friday and Saturday in the hall of the Boston Public Library and the Friday evening session at the Massachusetts Institute of Technology. The headquarters of the society will be at Hotel Lenox, Boylston street. The office of the Boston Convention Committee is room 1115, 101 Tremont street.

Heat, Light and Power in Buildings

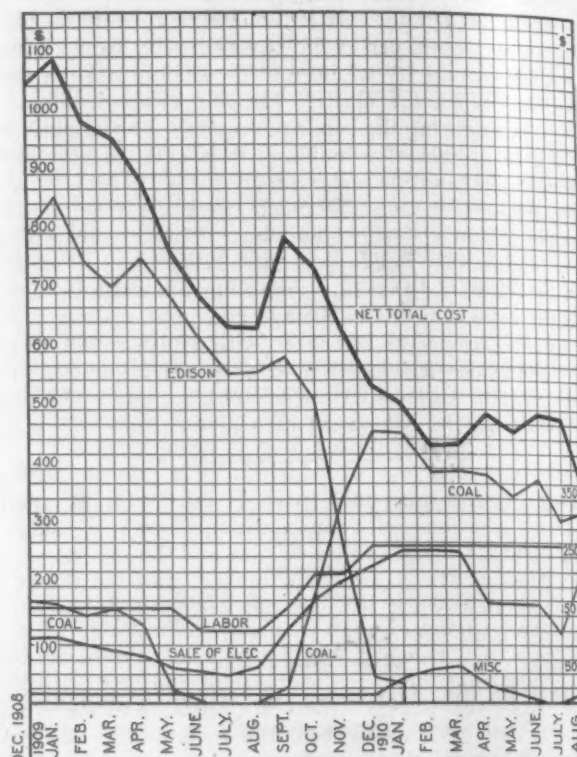
Some Operating Details of the Modern Structure

At a meeting held recently in Washington, D. C., of the National Association of Building Managers, an extensive paper, entitled "Heat, Light and Power in Buildings," was read by C. M. Ripley, vice-president of the Engineering Supervision Company, 43 West Thirty-fourth street, New York. The bulk of the paper was given over to enumeration in detail of the coal and other costs of the building plant, labor charges and miscellaneous expenses and related figures, all compared with the electric output and other features of building service, in 16 different buildings, all but one of which are in New York. A special point of the statistics was the identification of each building by name and location, a fact calculated to inspire confidence in the accuracy of the figures. The accompanying table, prepared by Mr. Ripley, summarizes the information given in the paper, which strongly advocates the use of independent power plants as against the purchase of electric current from central plants.

A graphic presentation of the saving in cost of building service in using an independent power plant as against the purchase of current is given in connection with the Monolith Building, New York, and is reproduced herewith.

The Monolith Building, 43-45 West Thirty-fourth street, 300 ft. deep, 50 ft. on Thirty-fourth street and 30 ft. on Thirty-fifth street, thus extending the whole block. The accompanying curve shows the detailed operating cost on the building manager's book for the past twenty months. Three different kinds of operation are shown during this period, as follows: From December, 1908, to October, 1909, the building was on Edison service exclusively. From October, 1909, to January, 1910, they were starting up the new electric plant, using some Edison and some of their own electricity. During the remainder of the time they were using their own electricity exclusively. The total net cost is the heavy black line at the top, and is obtained by adding all operating expenses for the entire twenty months and subtracting therefrom the entire income from the sale of electricity to tenants and neighbors. It is this difference month by month that locates the points on this curve.

The author also contributed to the paper data obtained from the operation of pumps in the Security Mutual Life Insurance Company's building in Binghamton, N. Y. The observations cover the use of an electric pump and also a steam pump for pumping water for use in the hydraulic elevator system. A series of



Costs of Operation, Monolith Building.

four different tests were run, one a week. The electric elevator pump was used one week and the steam elevator pump the next. The coal consumption, electric output and number of elevator trips were carefully noted. The accompanying table gives, in brief, the result of a typical test run for two five-day periods:

Comparative Performance of Hydraulic Elevator Pumps.

	Electric pump, May 3 to 7.	Steam pump, May 10 to 14.
Coal burned, tons.....	17.3	20
Number of elevator trips.....	3,937	3,363
Kilowatt-hours of electricity.....	4,780	3,230

Name, location.	Size.	Stories.	Kind.	Age.	Plant equipment.	Gross yearly cost of engineering department.	Receipts from sale of electricity and steam.	Actual net cost engineering department.	Net cost if buying electricity.	Saved by plant.	Value of electric plant.	Saving in per cent. on investment.	Years for electric plant to pay for itself.
1. Terminal Building, 103 Park avenue.....	100 x 100 Corner.	12	Office	3	E. H.	\$8,486	\$400	\$8,086	\$11,667	\$3,601	\$12,000	30	3 1/2
2. Monolith Building, 43-45 W. Thirty-fourth street.....	40 x 200 Inside.	13	Office	3	E. H.	9,000	3,000	6,000	10,252	4,252	13,000	33	3
3. Acker, Merrill & Condit, Fifth avenue and Thirty-fifth st.	86 x 150 Corner.	11	Office	3	H.	21,116	Electric plant is now being installed.			5,500	16,000	33	3
4. —, on lower Broadway.....	50 x 150 Corner.	12	Office	2	E. H.	8,541	1,710	6,831	9,281	2,450	14,000	20	5
5. Sohmer Building, Fifth avenue and Twenty-second st.	29 x 110 Corner.	12	Office	10	E. H.	3,732	943	2,789	5,000	2,211	9,000	25	4
6. Security Mutual Life, Binghamton, N. Y.....	70 x 140 Corner.	10	Office	7	E. H.	9,570	600	8,970	13,000	4,230	15,000	35	3
7. —, daily New York evening newspaper.....	60 x 100 Inside.	10	Office	4	H.	23,000	...	...	...	...	...	...	...
8. Landsdorf, Spring and Crosby streets.....	100 x 100 Corner.	12	Loft	3	E. H.	7,867	2,835	5,032	9,970	4,938	8,300	60	2
9. A textile building downtown.	100 x 100 Corner.	12	Loft	9	H.	12,544	2,000	10,544	10,544	...	...	...	...
10. 213 Grand street.....	50 x 92 Irreg.	9	Loft	1	E. H.	...	...	...	...	...	...	...	...
11. Well & Mayer, 580-600 B'way	150 x 200 Inside.	12	Loft	10	E. H.	19,328	13,336	5,992	15,044	9,052	20,000	45	2
12. Hendrik Hudson, Riverside and 110th street.....	100 x 200 Inside.	9	Apt.	3	H.	10,672	4,059	6,613	6,613	...	...	...	...
13. Hotel Hargrave, Seventy-second street & Columbus ave.	50 x 200 Inside.	12	Hotel	5	E. H.	14,108	0	14,108	22,524	8,416	13,000	65	2
14. Another hotel uptown.....	50 x 100 Inside.	12	Hotel	4	E. H.	21,600	A wasteful plant now being reorganized.						
15. Reisenweber's, Eighth avenue and Fifty-eighth street...	50 x 120 Corner.	7	Hotel	7	H.	12,988	0	12,988	...	...	...	...	...
16. French Hospital, West Thirty-fourth street.....	100 x 100 Inside.	8	Hosp.	4	E. H.	13,070 in 1908 } 8,160 in 1909 }		\$4,910 saved annually since.					

E—Electric plant. H—Heating plant. I—Ice plant.

The conclusion obtained from the test was that 18 per cent. more service was delivered with 16 per cent. less fuel when the electric pumps were used, or about 40 per cent. in their favor. It was noted that the electric pumps saved \$8.05 in the five-day test, but if the additional 1550 kwhr. to run these pumps had been bought from the electric company at 5 cents per kwhr., it would cost \$77.50. Or if the electricity were bought as low as 3 cents per kwhr., the electricity would have cost \$43.50, entirely wiping out the saving of \$8 in the fuel bill which the electric pumping effected.

When figuring the capacity required for pumping in the case of the lofty building, it is often overlooked that, in pumping the water supply for a 12-story building, about four times as much energy is required as pumping for a 6-story building. This results from the fact that one building requires twice as much water as the other, and that this double amount must, in turn, be forced to about twice the average height, making four times the service as compared with a 6-story building.

The paper concluded with a strong argument for enlisting the services of the consulting engineer before deciding on the equipment of a given plant.

The Anniversary Number of "Grits and Grinds"

The anniversary number of "Grits and Grinds," published by the Norton Company, Worcester, Mass., has just been received. It is a notable issue of an interesting publication, commemorating the first birthday of "Grits and Grinds," the tenth birthday of the Norton Grinding Company, and the twenty-fifth anniversary of the Norton Company. In the beginning is a complete roster of the employees of the Norton Company in Worcester; Niagara Falls, N. Y.; Chippewa, Canada, and those at Wesseling, Germany, who went from Worcester, together with the members of the company's office forces at New York and Chicago. There is also a roster of the Norton Grinding Company.

The historical data are of exceptional interest, including the principal events in the remarkable history of a great and successful industry. The illustrations are most complete. Many hundreds of faces are pictured, including the board of officers, the superintendents and other important men throughout the plants; the office force, and employees who have served the company from 10 to 20 years, and another group with a 20 years and longer service behind them, and others who date even from the beginning of the company's manufacturing days. The various plants are strikingly shown, and the groups of medals won at various international expositions are reproduced. The Norton Grinding Company is similarly featured. The several types of its grinding machines are shown, illustrating a historical and reminiscent article by Charles H. Norton.

A chapter of the issue is devoted to the Pike Mfg. Company, Pike, N. H., with photographs of Edwin B. Pike and E. Bertram Pike, with the statement that in 1910 the Norton Company acquired an interest in the company, which since 1901 has acted as selling agent for the India oil stones manufactured at Worcester. Another section, with photographs, is given over to Schuchardt & Schutte and Alfred Schutte, who have acted as the company's exclusive representatives on the Continent of Europe for nearly 20 years.

Steel Passenger Cars.—The first lot of all steel suburban cars built for the Pennsylvania Railroad Company has just been received by the company. They have been sent to New York where they will be used in the suburban service out of the Pennsylvania Station. The Pennsylvania Railroad will shortly have

available for use on its lines east and west, solid trains of steel passenger cars. This includes some 600 Pullman parlor and sleeping cars as well as a large number of suburban cars such as the company's shops are just beginning to turn out. An order for 40 all-steel vestibule passenger cars has been placed with the Pullman Company by the Lehigh Valley Railroad. They are to be delivered in March and April of next year.

Foundrymen's Meetings

Executive officials of the various organizations of foundrymen recently held a meeting in the Fort Pitt Hotel, Pittsburgh, and preliminary arrangements were made for the annual convention of the American Foundrymen's Association to be held in Pittsburgh the week of March 23, 1911. A stockholders' meeting of the recently incorporated Foundry & Machine Exhibition Company was also held and a permanent organization effected with the following officers: George R. Rayner, Carborundum Company, Niagara Falls, N. Y., president; E. H. Morgan, Arcade Mfg. Company, Freeport, Ill., vice-president; J. S. McCormick Company, Pittsburgh, treasurer; C. E. Hoyt, Lewis Institute, Chicago, secretary. The annual meeting of the executive committee of the Foundry & Manufacturers' Supply Association was also held in Pittsburgh October 11, at which it was decided to dissolve the Foundry & Manufacturers' Supply Association, the Foundry Machine & Exhibition Company, incorporated under the laws of Pennsylvania taking its place. A resolution was adopted as follows: "Resolved, that the Foundry and Manufacturers' Supply Association be disbanded and that the treasurer be empowered to remit all funds in his hands to members, pro rata, after defraying the standing liabilities; the foregoing resolution to be submitted to the membership not later than October 20, in writing, the ballot being returnable not later than October 30; the acquiescence of members not returning ballots will be taken for granted." A committee consisting of S. T. Johnston, of the Obermayer Company, Chicago; R. W. Turnbull, Henry E. Pridmore Company, and F. N. Perkins, was appointed to wind up the affairs of the association.

The Schrade Cutlery Company.—On October 13 George Schrade, president of the Schrade Cutlery Company, Walden, N. Y., sold to J. Louis Schrade all his interest in the company and retired from it. At a subsequent meeting of the Board of Directors new officers were elected. The officers and directors of the company are now as follows: J. Louis Schrade, president; Philip Hasbrouck, vice-president; William Schrade, treasurer; Irving H. Loughran, secretary; Jacob Herman, director. J. Louis Schrade was one of the organizers of the company in 1904, has been treasurer from that time and has been practically in charge of and managed the company. William Schrade will become more active in the company as treasurer and superintendent of the factory.

The Quebec Bridge.—Ottawa advices state that a question of design is largely involved in the tenders for the Quebec Bridge, now being considered by the commission. This figures more largely than does the lowest tender. Each company bidding was authorized to submit its tender either upon the plan of the commission or its own designs, and they have all followed the latter course. It will take fully another month to figure out the plans and decide as to which is the best.

The Globe Mfg. Company and the Taunton Wire Nail Company have been consolidated under the title of the Globe-Taunton Nail Company. The company manufactures wire nails, tacks, &c., at Taunton, Mass.

Contract Obligations in the Iron Trade*

How They May Be Better Kept and Enforced

BY WILLIS L. KING.†

The great writers and thinkers of the twentieth century practically agree that the world is growing better in all things that pertain to the well being of man individually and collectively. They assert that the Golden Rule is not now regarded as a platitude or impracticable theory, but is actually being constantly applied in the settlement of many questions which have heretofore caused much friction and enmity among men. They believe, and apparently with good reason, so great is this feeling of tolerance and fairness, that war between civilized nations is now impossible and that no question so serious can arise between nations which conference or arbitration cannot speedily and amicably settle.

As manufacturers of iron and steel it is well worth our while to consider whether the business world, and especially our own business, has kept pace with this trend for better things; for I feel sure we would not willingly be laggards, but rather lead in all that stands for betterment in our great and important industry.

Betterment in the Steel Industry

The most casual observer cannot fail to notice a change for the better in our business ethics during the past 10 years, but only the men who have had an active part in business under former and present conditions can appreciate in full measure the improvement in business morals. This is perhaps most apparent in the treatment of and consideration for the workmen in this great industry. No expense is now spared in the installation of better and safer machinery and methods. The hours of labor are reduced whenever possible, and the sanitary housing and education of the men and their families are constantly being considered and improved. Old age and disability pensions are the rule rather than the exception. Large sums are also being constantly expended for the foundation and support of schools, churches, hospitals and other institutions which serve to better the physical and moral condition of the workmen. In fact, a spirit of fairness and an effort to do the right thing is everywhere apparent in the relation of employers toward their employees.

This same spirit is evident in the consideration displayed among the steel manufacturers toward each other. The old system of undue and unreasonable rivalry for business and jealousy in the success of others has passed and given way to mutual regard and forbearance, even to the extent of freely exchanging information regarding new processes and machinery, and otherwise helping along the common good and general stability of the industry.

It has come to be accepted that no manufacturer can long be prosperous unless his fellows are also prosperous, and that whatever makes for the well being of one must be shared in by all, if the maximum good is to be secured. Toward the buyers and consumers of steel products the manufacturers are pursuing a broad and liberal policy. They believe that fair prices and reasonable stability are better in the long run for all concerned than violent fluctuations. No effort is made to advance prices unduly, in periods of excess demand, nor to force their product on a market beyond its consuming power.

Laxity in Contract Observance

These conditions would seem to be ideal and leave nothing to be desired; but it would be both rash and

untruthful to say that we have reached perfection or that better things cannot be attained, and the object of this paper is to lay before you what a parson might call a "schism" in business principles or a doctor an "obsession," but which as a layman I would call a laxity or indifference to the moral obligations of a contract, only lately apparent, but I am glad to say not by any means common.

I anticipate the astonishment this statement will produce in the minds of our distinguished guests and fellow manufacturers from abroad, and hasten to assure them that the steel and iron manufacturers of this country hold sacred and keep inviolate any contract as against themselves; but it is the party of the other part to whom I refer, the buyers of steel products, some of whom have lately developed a growing tendency to regard a contract of purchase in the nature of an option, to be exercised if the market advances, but to be canceled or reduced if it should not prove favorable.

A study of this tendency cannot fail to be interesting and should be instructive; for, strange as it may appear, it does not seem to have obtained foothold in any other manufacturing or commercial line. Logically we are led to the conclusion that either there is something inherent in the present conduct of the steel industry which has fostered such a tendency, or that the buyers of steel products have a different standard of business ethics than other buyers. But neither of these premises seems to be tenable; for with our knowledge of the conditions we cannot admit the one and are unwilling to believe the other.

The responsibility for this lapse must, of course, be divided between the manufacturer and his customer, for the legal status of a contract is well defined and the manufacturer in condoning the action of the buyer is equally guilty. The remedy, however, lies with the manufacturer, and if this association will take the position that so far as its influence goes a contract shall be a contract, it will undoubtedly receive the loyal support of all manufacturers, and also of all legitimate and careful buyers; because their customers in turn will then carry out their engagements and the menace of speculative purchases will be eliminated.

Reasons for Contract Abuses

I think it will be proper to consider first some of the reasons of the buyers for this recent departure from well established law and precedent, and while I must confess I cannot find any good or logical reason, for nothing in my opinion can excuse a failure in contract obligations, yet I think we must assume that successful business men of long experience and high character certainly feel they have some sort of reason for such a position, and must also assume that they are unwilling to be considered as opposed to the integrity of a contract; but I take it that such men would perhaps seek justification.

First, because the large steel makers own and operate their own mines and are not obliged to contract for their ore, coke and other raw material on the market as in former years. Therefore, in reducing the price or cancelling a contract they do not now suffer an actual loss beyond the possibility of an increase in wages.

Second, that the demand has fallen off since the contract was made and those to whom they have resold do not take out the material, and they should, therefore, be made whole by the manufacturer, who is perhaps better able to bear the loss.

Third, that the market for steel products for the last few years has not been subject to the frequent and violent fluctuations of former times, and their opportunity to "buy cheap and sell dear" is so restricted that a contract now should be elastic both in price and tonnage, whenever it proves unfavorable to them.

I shall not attempt to argue or refute these claims,

* A paper read at the New York meeting of the American Iron and Steel Institute, October 14, 1910.

† Vice-President of the Jones & Laughlin Steel Company, Pittsburgh, Pa.

because they are so evidently wrong in premises and illogical in application that any discussion seems unnecessary, but will hasten to answer as best I can the very pertinent inquiry as to why the steel makers have allowed this abuse, when control rested in them. In my opinion, their indifference can be laid to three things:

First, to the fact that in times of large demand, business is so prosperous that the loss of tonnage can readily be replaced; and conversely, in times of small demand, competition for business perhaps justifies temporarily a lapse in contract obligations.

Second, to a reluctance in bringing suit in court, with its attendant annoyance, delay and expense.

Finally, to the fear that such a course would bar any future business relations.

These reasons are no more weighty than those set forth on the other side, and I submit should no longer be allowed to stand in the way of a business principle so vital and necessary to the welfare of this great industry.

In these days of large tonnages, contracts are not only necessary but cover the larger proportion of the business done in steel products, and any temporizing with a principle so vital as the inviolability of a contract must inevitably result in a lowering of the moral tone of the industry, and cause great loss and uncertainty in its operations.

I need not remind you of the inefficiency of individual effort in a matter of this kind nor tell you that only concerted action can accomplish the desired result, and I regard our industry most fortunate in having a great organization, such as the American Iron and Steel Institute, to which all such questions may safely be submitted for discussion. I believe this question is above all others in importance to the interests represented here to-day, and beg to express the hope that, after a full discussion by the members, such action will be suggested and put into effect as will for all time correct this tendency to belittle the moral obligations of a contract.

Personal

B. R. McDonald, formerly sales manager in New Orleans for the Casey & Hedges Company, Chattanooga, manufacturer of boilers and plumbers' supplies, has been transferred to Cincinnati, Ohio, and will have charge of all the central Western territory.

Joseph Schaeffers, for a number of years connected with the Simplex Automobile Company, and later with J. M. Ellsworth, 518 West Twenty-second street, New York, in the building of motor cars, has taken the American agency of the Lindenberg Steel Mills, Remscheid-Hasten, Germany, manufacturer of high grade tool steels, high speed steels and alloyed steels of every description. Mr. Schaeffers has opened offices at 1451 Broadway, New York, and stockrooms in South Brooklyn.

R. W. Dull, Aurora, Ill., has resigned as chief engineer for the Stephens-Adamson Mfg. Company, Aurora, Ill., to engage in business as a consulting engineer.

John Lambert, Chicago, was elected a director of the Republic Iron & Steel Company at the annual meeting of the stockholders, held in Jersey City, October 19. He succeeds Leonard C. Hanna, Cleveland, who declined re-election, having determined to retire from corporation activity generally. Oakleigh Thorne, president of the Trust Company of America, New York, was elected a director to fill a vacancy. The other retiring directors were re-elected.

John I. Rogers, who resigned last year from the Midvale Steel Company, Philadelphia, to take up professional practice in consultation work and design, has

opened a New York office in the City Investing Building, at 165 Broadway, and will now use it as his main office. He is giving particular attention to forging by the steel hammer, the drop hammer and the hydraulic press; of special rolling, such as railroad tires and rolled wheels; of the use and manufacture of alloy steels; of machine shops and power plants, and of general iron and steel works engineering.

W. W. Stephens, president of the Stephens-Adamson Mfg. Company, Aurora, Ill., sailed October 15 for a six weeks' vacation in Europe.

George W. Crawford has been elected a member of the Board of Directors of the Crucible Steel Company of America to fill the vacancy caused by the resignation of J. D. Lyon. Other members of the board were re-elected.

W. C. McAdoo, who has been selling agent for the Steel Kote Paint Company in the Philadelphia district, has been made general manager of the paint department of the Schoellkopf, Hartford & Hanna Company, manufacturer of protective paints, 30 Church street, New York. Associated with him is C. H. Spotts as assistant manager.

E. Peter Jones and W. Llewellyn Jones of the Wolverhampton Corrugated Iron Company, Ltd., Wolverhampton and Ellesmere Port, Cheshire, England, are making a brief visit to this country.

After an illness of some weeks, L. H. Bregenzer, general superintendent of the Keystone Steel Foundry Company, Avonmore, Pa., has returned to his duties.

William C. Franz, general manager of the Lake Superior Corporation, was the guest of honor at a banquet given at Sault Ste. Marie, Ont., October 21, by the citizens. The occasion was the practical completion of the four new plants upon whose construction and equipment the corporation has been engaged for upward of a year—the additional blast furnaces, the coke ovens, the gas power plant, and the structural steel plant. It is expected that these new works, whose total cost will be about \$6,000,000, will be ready for operation before the end of the year. Among those present were members of the Canadian Government, prominent Canadian bankers and business men from various parts of Canada as well as England.

Fritz von Stumm of Neunkirchen, Germany, is making a tour of American iron and steel centers.

Andrew Carnegie arrived in New York October 23 from Europe and will remain in this country until next spring.

Henry Dreses, president of the Dreses Machine Tool Company, Cincinnati, Ohio, arrived home last week after an absence of several months on a business and pleasure tour through Europe.

John Fritz, Bethlehem, Pa., the dean of the iron trade of America, has accepted an invitation to attend a testimonial dinner to be given in his honor by the Manufacturers' Club, Philadelphia, Pa., on the evening of November 17. In tendering this invitation, it was the desire of the club to express to Mr. Fritz the full appreciation of the manufacturers of Pennsylvania for the great work he has done in the development of the iron and steel industries of that State and of the country at large. Andrew Carnegie is honorary chairman of the Committee of Arrangements, with Isaac Clothier, Charles M. Schwab, W. E. Corey, Charles Kirchhoff and John Birkinbine as associates, the active chairman being Nathan T. Folwell, president of the club.

The population of Portland, Me., is 58,571, an increase of 8,426 over 1900; Brockton, Mass., 56,878, an increase of 16,815; Fitchburg, Mass., 37,836, an increase of 6,295; West Hoboken, N. J., 35,403, an increase of 12,309; Lima, Ohio, 30,508, an increase of 8,785; Hamilton, Ohio, 35,278, an increase of 11,365; Lorain, Ohio, 28,883, an increase of 12,855.

International Competition in the Steel Industry*

"Foreign Relations" from the American Standpoint

BY J. A. FARRELL.†

The subject of "Foreign Relations" is closely allied to reciprocity. To those, especially our foreign friends, who have practiced it for many years, and have had experience in its application and philosophy, my treatment of some of the elementary principles may seem to lack the extended study and experience which the subject deserves. As reciprocity among nations is one of the most important questions now engaging the attention of political economists, so is mutual intercourse in the steel industry and the development of friendly commercial relations at home and abroad a matter which merits the most earnest consideration and the best endeavors of the master minds of the industry.

There was a time when the secrets of production as well as of distribution were jealously guarded. The dissemination of metallurgical, chemical and mechanical knowledge was left to the technical societies and little attention was paid to economic and commercial changes. The various manufacturers had nothing in common with one another commercially, and as a consequence of aggression by the stronger ones, or improvements or inventions resulting in lower costs of production, the industry periodically lapsed into a state of ruinous competition.

A Better International Feeling

A gradual evolution, however, has taken place and in these later days commercial intercourse in the industry has been greatly developed. The vast progress made in science in recent years has resulted in an enormous industrial development and the production of a volume of manufactures far in excess of the dreams of the pioneers in the industries. The ever increasing output of the great manufacturing nations imperatively demands ever expanding markets, and the problem of finding adequate outlets for the production of the great industry is one of peculiar interest to us all.

We have come to appreciate the fact that the methods of peace are more profitable, to everyone concerned, than the methods of war. The old delusion that there is advantage in preventing one's rival from doing business, no matter at what cost, is giving way to more enlightened views and methods. The technical features of iron and steel manufacturing have made material advances and the commercial side is undergoing many alterations, and while there is a long road to travel in getting away from ruthless competition, progress is being rapidly made in the adoption of more co-operative methods.

Just as the nations have found it necessary to confer to the ends of peace and prosperity, it is natural that the great national groups of industries represented here by many of the commercial heads of the leading iron and steel manufacturing undertakings throughout the world should meet each other and discuss matters of common interest, to the eventual betterment of the industry. For as steel is the barometer of trade any improvement in the conditions of the steel industry must ultimately be reflected throughout the consuming markets of the world, which are dependent on the manufacturing nations, alike for the steel which is to them the sinews of war and for the upbuilding and support of industries and utilities that make for civilization and progress.

The spirit of the times in the steel industry is in harmony with a policy of good will. Such a policy, in order to be equitable and enduring, must be sufficiently comprehensive to ensure approximately equal advantages to call the parties affected. We have all been bending our energies to the upbuilding of our factories, and have succeeded beyond any dreams or prophecy; but, while we have been doing this, have we given as much effort to the consideration of a rational mode of disposing of the production, and to the wisdom and importance of peaceful rivalry? All of these are incidental necessities as relating to the conservation of our raw materials.

Amity in the Steel Trade Making Progress

While at first many in this country as well as abroad doubted the practicability of amity in the steel trade, it is doubtful if there are many to-day who would deny the wisdom of safeguarding the industry from the disastrous results of destructive competition, or who would be so incredulous as to question the benefits accruing from an interchange of views and a policy of mutual consideration, having for its object the promotion of peaceful methods of trade expansion, and the interchange of information for mutual benefit, and for the continued improvement of manufacturing and labor conditions.

The presence of our honored guests recalls many occasions when the manufacturers of Great Britain and Continental Europe have discussed measures to the resulting benefit of the industry, and consequently to the benefit of the world, which is so largely dependent on steel in many forms. Such general exchanges of opinion as to new developments in the greatest of the world's industries bring closer together each succeeding year the principals of the steel trade of the leading manufacturing nations.

In view of the diversity of ores, of labor conditions, of economic principles, of business ethics, of manufacturing difficulties, the recovery and treatment of by-products, and of various other distinctions and differences in methods of production and of distribution, the manufacturers of each country are coming to recognize that co-operation with their neighbors and with manufacturers in other countries tends to promote business amenities, notwithstanding that they are in competition for the trade of the world.

Technical Questions Less Prominent

However, in recent years it has been noticeable that at meetings of the Iron and Steel Institute and of German, French, Belgian, Russian and other European technical associations, papers on scientific subjects are not infrequently "taken as read." In fact, the consideration of technical problems has, to some extent, given place to the discussion of business matters, economics, and even politics as affecting the welfare of the industry, as by reason of the difficulty of further reducing costs and the gradual awakening all around of the leaders of the industry in the various countries, the advantages possessed by the steel manufacturers of any country over the others have largely disappeared.

The question whether one country can produce iron and steel more cheaply than another is disposed of by the commonly accepted fact that the best equipped industries, wherever located, have little, if any, advantage over one another. Certain it is that we in this country

* A paper read at the New York meeting of the American Iron and Steel Institute, October 14, 1910.

† President United States Steel Products Company.

are not laboring under any delusions as to our prowess or advantage over our foreign competitors, and in the matter of gas engines, by-product coke ovens, briquetting of ores, and other scientific and mechanical developments, we have learned and can still learn a great deal from our foreign friends. Such being the case, it is not surprising that the leaders of the industry both at home and abroad should be largely occupied with questions of a commercial character, which are at present of as great, if not greater, importance to the welfare of the industry than those of a technical character.

How Sales Departments Dissipate Operating Savings

Without any desire to belittle the practical value and importance of effecting a saving in cost of production, however small, it has always seemed particularly hard upon the men who have accomplished what may appear as an insignificant reduction of the previous month's costs of producing pig iron, or of ingots, or of wire rods, to have this saving in mill costs dissipated by the sales department "quietly meeting the market" with a reduction of \$1 or \$2 per ton at the first sign of any cloud on the commercial horizon.

Good salesmanship and sound business principles in the conduct of the selling of iron and steel are just as essential and vital to the prosperity and continued success of the industry as low costs and up-to-date machinery and manufacturing practice. Old traditions die hard, but are not necessarily entitled to respect because of their hoary age.

It ought to be self-evident not only that none of us can do all the business, but that it would be unfortunate if any one of us could. Starting out with the conviction that one's competitors will probably secure their share of the business any way, it has always seemed that a policy of live and let live is likely to produce better results than one of trying to make business impossible, or at least unattractive, to one's competitors. A saner policy would seem to be one of conserving prices at a reasonably remunerative level, and of adjusting production to the requirements of consumption, in these days of craze for construction of new plants and extension of old ones without reference to whether there is a market for the increased production.

Better Market Methods in Europe

In recent years such common sense views of the commercial side of the questions have prevailed among our friends abroad, and the manner in which they, notwithstanding the diversity of their opinions, characteristics and tongues, have succeeded in creating stability of prices and conditions, would seem to dispose of any theory that the steel manufacturers of this country could not, if they so desired, bring to bear on the question of the conduct of their commercial operations the same comparative intelligence as our European friends. It would seem that this question is one which is very prominently before us, and that the commercial aspect of the steel industry must eventually take an important place in the deliberations of the various iron and steel associations.

The world's market for steel may be likened to a huge reservoir, into which the entire production of the steel mills is poured; and, notwithstanding that it is, so to speak, divided off by bulkheads, you cannot pour into one compartment more than it can hold without its overflowing into other compartments; consequently, any unusual effort to wrest the natural markets from the manufacturer, who, by reasons of geographical proximity or political or financial affiliations, is reasonably entitled to them, means that a corresponding tonnage must be disposed of by him elsewhere in the natural market of his competitors.

This would be a form of unnatural aggression which would be as unprofitable as it would be unwise. Trade of all descriptions must follow the lines of least re-

sistance in order to secure the best results. In Europe for many years the steel industry and its allied lines, by reason of organization, have intelligently dealt with the disturbing effects of recurring periods of excessive supplies to which the steel industry has been subject. Regulated production and systematic distribution have permitted each of the manufacturers to obtain a reasonable and profitable share of this business. It is such a self-evident principle of economics that it receives governmental sanction and support. This satisfactory condition is likewise attributed in part to the maintenance of confidence on the part of both producers and consumers, due to the absence of fear that the markets were in danger of being raided with the object of capturing an unnatural share of trade.

Foreign Methods a Pattern for the United States

How to insure similar conditions in this country is a question worthy of serious consideration, and as the functions of this Institute are more or less commercial there are many points which can be discussed with mutual benefit. The problem of how to dispose of our products without demoralizing the markets of our competitors will, I believe, practically be solved by a policy of conciliation and consideration. It has often been said that "steel is either a prince or a pauper." Under conditions of extreme competition the latter is inevitable, but experience has proved that with co-operation as the guiding policy steel need never be a pauper nor yet occasionally a prince, and normal conditions may be maintained to the mutual benefit of manufacturer, merchant, consumer and laborer.

In Europe the advantages of co-operation and the disastrous possibilities of destructive competition have been amply demonstrated. For many years excessive competition kept the steel industry in Germany down to a low level of prices, wages and production. In recent years, however, there has been a marked improvement, due to the formation of the Stahlwerks Verband, which, by including in a single association the principal producers of Germany, has been able to maintain reasonable prices in their home market, resulting in increased consumption, and at the same time to largely increase their trade with foreign markets.

In this connection it is well to note a radical difference between the conditions prevailing in Europe and those which are possible in this country. The right of European manufacturers to organize for the protection of their mutual interests is not only recognized, but is encouraged and fostered, the manufacturers being thereby enabled to maintain a higher level of wages, to furnish material to consumers at equitable rates and to maintain stable prices. The formation of the German Steel Works Union and the successful results accomplished by it were largely due to the efforts of the banking interests of Germany, who realized that it was essential to the welfare of the railroads and other interests allied with or dependent upon the steel industry, that ruinous competition among steel manufacturers should be discouraged. Similar results largely actuated the financiers who organized the large consolidations of manufacturing interests in this country.

In Germany the establishment of the Steel Works Union rendered possible the resumption of operations by mills built during the years 1900 to 1902, but which had lain idle for several years following the collapse of 1903, as orders, whether plentiful or scarce, were allotted to its various constituent companies in proportion to their manufacturing capacity and requirements.

Similarly, the remarkable increase in the production and consumption of steel in this country, accompanied by general prosperity and higher wages, during the period from 1903 to 1907, was largely due to stability of prices, which resulted from the large consolidations of manufacturing companies at a time when ruthless

competition had been carried to a point where it threatened disaster to the entire industry.

Accommodating Production to Demand

One of the most serious economic questions under consideration in foreign manufacturing centers, and one which is no less vital to this country, is that of accommodating production to demand in times of trade relaxation, and it is remarkable that the opinion of the foremost men of the steel industry is that this and similar problems can only be solved by co-operation, which they regard as essential to the maintenance of the equilibrium of the world's markets.

European steel makers—that is to say, the manufacturers of Great Britain, Germany, France, Belgium, Austro-Hungary, Russia, Italy and Spain—have come to recognize that the policy of consideration for competitors has been in recent years one of the fundamental principles of the steel trade of Europe. It is a business proposition and not one of sentiment. No one who has studied the industrial conditions of Europe can reach a conclusion unfavorable to the combined effect of preserving the expediences as well as the comities of intercourse in the steel world.

Hence, let us develop a policy of mutual consideration of the interests of our foreign brethren as well as our domestic competitors, which, more than any other factor, will enable each manufacturing country to maintain the volume of its business to which it is reasonably entitled.

At a dinner given to Judge Gary in Sheffield in 1909 by the leading steel manufacturers of Great Britain, it was recalled that the financial crisis of 1907 and 1908 had wrecked but few iron and steel firms, and this was largely attributed to his skill and wisdom in promoting friendly relations with the trade at a time when drastic price reductions would have caused widespread disaster. That this policy could be applied to the industry here, or of the whole world, with equally good results under similar conditions, was accepted as a tenable doctrine, which would eventually result in the betterment of business everywhere.

What Co-operation Will Do

The ultimate result of a general adoption of this policy would be to insure stability of prices and continuous production, commensurate with the requirements of consumption. The absence of ruinous dumping of surplus products in times of depression, and the pursuance of a conservative and steady policy toward the securing of business at fair prices, likewise refraining from the temptation of advancing prices excessively in times of great demand, must tend to obviate heavy reductions, which experience has always shown to be the inevitable result of excessive advances.

This progressive policy would remove the principal cause of the recurring depressions in the steel industry, and in consequence would permit of its continual expansion and advancement along natural lines. The feeling of security and commercial peace which would be promoted by the continuous stability of the world's chief industry would be reflected in all branches of trade.

A general adoption of the principle of co-operation in place of ruinous competition, resulting in more stable conditions in the steel industry, would naturally enable manufacturers to carry out plans for the betterment of conditions of labor, which the changeable conditions of the steel industry have heretofore impeded, such as pensions, insurance against accidents and amelioration of working conditions. It would enable the refinement of practice, improvement of plants and the installation of safety appliances. It would ultimately permit of reduction in costs, and it has been the history of every industry, including the steel industry, that reductions in cost of manufacture are invariably reflected in the

prices to the consumer. Thus the consumer must eventually benefit and without reducing the fair and normal profit to the manufacturer.

The manufacturers of each country have much to learn from the others, and this assemblage can do much for the welfare of the industry, its allied lines, and for consumers the world over, who must profit by each succeeding development tending to reduce costs, facilitate distribution or ameliorate the conditions of labor. The natural rivalry to excel has produced results in production and operation which have amazed the pioneers of the industries, who were themselves engaged in creating records a generation or two ago.

The names of Bessemer, Krupp and others will stand for all time as monuments to the development from the age of iron to the age of steel. The pulses of the world have been quickened and civilization has assumed a new meaning during the developments of the past 20 years. Every year new uses for steel are found, to lighten the burden of the world's works or to enhance the luxury of its living. It is the predominant factor in the progress of nations, whether by the arts of peace or the weapons of war; yet, whatever may have been the developments and progress during our lifetime, it is safe to assume that the age of steel has but begun and that the future holds more surprises than the past.

Stevens Engineering Lecture Course

The Stevens Engineering Society of the Stevens Institute of Technology, Hoboken, N. J., announces an extended lecture course for the season of 1910-1911. It began Tuesday, October 18, and will close Tuesday, April 4. Among the lecturers are Dr. Alexander C. Humphreys, president of the Institute; Irving E. Moulthrop, engineer in charge of construction and installation for the Boston-Edison Electric Company; Dr. R. W. Raymond, secretary American Institute of Mining Engineers; Dr. David T. Day, U. S. Geological Survey; Dr. James Douglas of Phelps, Dodge & Co.; Carl Hering, electric furnace expert; Dr. William Campbell, association professor of metallurgy, Columbia University; Dr. A. Stanley Mackenzie, professor of physics, Stevens Institute; George E. Hulse, chief engineer Safety Car Heating & Lighting Company.

An Obermayer Foundry Exhibit.—The S. Obermayer Company made an exhibit of foundry equipment and supplies at its factory, Eighteenth and Rockwell streets, Chicago, October 26. The factory was in full operation, showing methods used in the making of plumbago, sea coal facing, core compounds and other lines of facings; also such supplies as snap and iron flasks, stripper frames, riddles, bellows, sprue cutters, &c. One entire floor was devoted to a working exhibit of core ovens, tumbling barrels, magnetic separators, core machines, &c. In the showrooms a complete display was made of small foundry equipment and accessories. A lunch was served to visitors. The company's local representatives comprise S. T. Johnston, O. C. Olson, C. M. Barker, J. E. Evans, Fred J. Brunner, J. Thorner, J. J. McDevitt, O. J. Peterson and F. H. Dodge.

For use during the cold weather when the trains of the Pennsylvania Railroad entering the New York station through the electrified tunnel zone are disconnected from their steam locomotives and taken across the Jersey meadows and through the tunnels by electric locomotives, steam generated in electric boilers will be used to maintain the temperature in the cars and keep the train connections from freezing. These boilers, which will utilize the 600-volt direct current from the third rail, are capable of generating steam at a pressure of 80 lb.

A New Acme Turret Lathe Turning Tool

The latest design of turning tool for turret lathes made by the Acme Machine Tool Company, Cincinnati, Ohio, is illustrated herewith. This tool is made in two sizes, the larger for turret lathes having spindles $2\frac{1}{4}$ in. in diameter, and the smaller for those where this dimension is $1\frac{1}{2}$ in., and it is claimed that it will turn up to the full capacity of the lathe on which it is used. Fig. 1 is an end view of the tool, which gives a

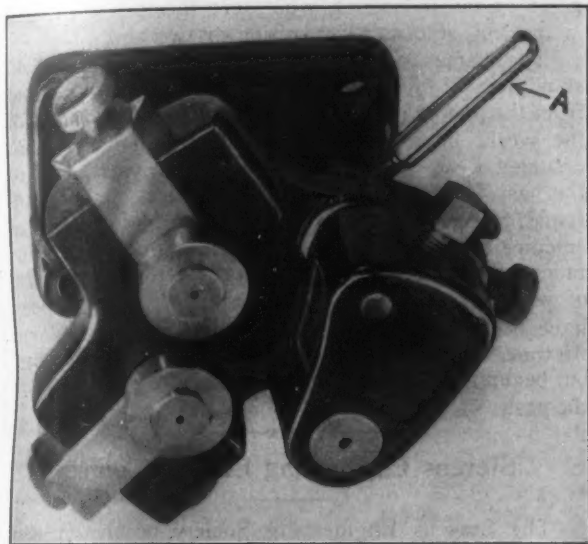


Fig. 1.—A New Turret Lathe Turning Tool Made by the Acme Machine Tool Company, Cincinnati, Ohio.

clear idea of the construction of the various parts, while Fig. 2 is a general view, showing the tool mounted on a lathe turret.

The tool has roller back rests mounted on independently adjustable slides. The tool post is made with a wide slot and also has two screw holes to allow the tool to be clamped in either a backward or a forward position, and the cutter to be set ahead of or following the roller back rests. A knurled screw controls the adjustment for the different sizes of work, and when the proper adjustment has been made it is

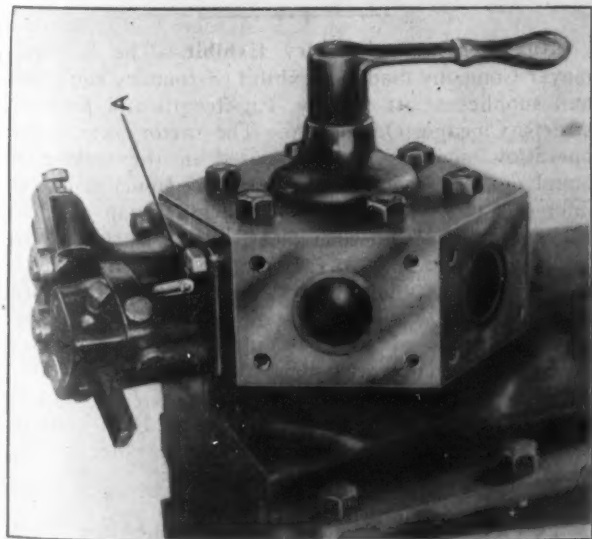


Fig. 2.—The Tool Clamped in Position on a Lathe Turret.

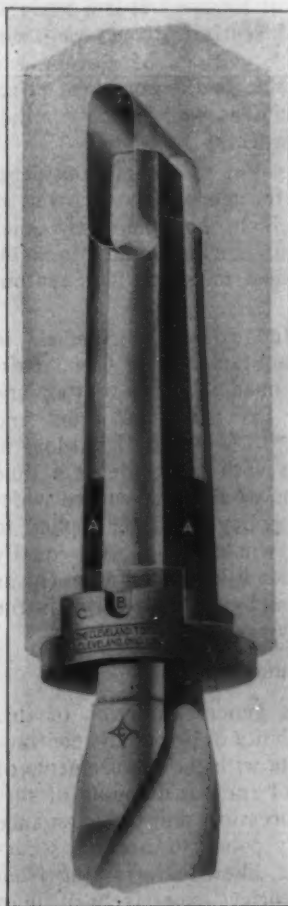
clamped securely to the body of the tool by a threaded stud with the lever marked A. When this lever is loosened the tool post has a slight outward movement which lifts the cutter from the work to prevent marring when the tool is withdrawn from service.

In mounting the tool on the turret, as shown in Fig. 2, it is centered in the circular recess shown on the turret face and bolted securely in place by the bolts

passing into the holes shown at the four corners of the face. There is a hole through the central stem of the turret of the same diameter as the face holes, which allows work to be turned up to the full length of the carriage travel with a minimum overhang of the turret tool.

A New Drive for Cleveland Flat Twist Drills

Numerous attempts have been made to solve the problem of using and driving twist drills forged or twisted from flat bars of high speed steel. Among the lines along which efforts have been made are designing chucks to hold and drive the rough end of the flat steel bar, twisting and machining the ends of the bar to form taper shanks fitting the regular taper sockets and fastening taper shanks to the ends of the flat twist drill



The New Paragon Collet for Flat Taper Shank Drills, Made by the Cleveland Twist Drill Company, Cleveland, Ohio.

either by riveting or soldering. Application has been recently made by the Cleveland Twist Drill Company, Cleveland, Ohio, for patents on a new device for driving flat taper shanks which are tapered both on the flat sides and the round edges and has as its object the overcoming of the difficulties previously encountered as well as providing additional driving strength.

Formerly the shanks regularly furnished on this company's Paragon flat twist drills were tapered on the round edges and the flat sides and were driven by sleeves or sockets of a special type. The interior of the sockets had a flat taper hole which fitted the drill shanks accurately and were tapered on the outside to fit the standard taper sockets or spindles. When large diameter flat twist drills having No. 6 shanks were used, this drive possessed the disadvantage of making necessary an extension reducing socket to adapt the large taper shanks to the drill press spindles, the tapers of which are seldom larger than No. 6. To adapt the Paragon drills having No. 5 and No. 6 shanks for use with this new drive the shanks have been redesigned so that the length is the same as the regular taper shank and the round edges have the regular Morse taper as formerly. When this shank is inserted in the spindle, the upper end fits into and is driven by the flat slot in the spindle in the same way as the tang of an ordinary taper shank drill. While this alone is a strong and practical drive it is open to the objection that the shank on its two flat sides at the lower end of the spindle is unsupported with possibilities of vibration and wear between the shank and the spindle. To guard against this and at the same time to furnish a powerful drive at the lower end of the shank where its cross section is a maximum, a new and original type-

extension reducing socket to adapt the large taper shanks to the drill press spindles, the tapers of which are seldom larger than No. 6. To adapt the Paragon drills having No. 5 and No. 6 shanks for use with this new drive the shanks have been redesigned so that the length is the same as the regular taper shank and the round edges have the regular Morse taper as formerly. When this shank is inserted in the spindle, the upper end fits into and is driven by the flat slot in the spindle in the same way as the tang of an ordinary taper shank drill. While this alone is a strong and practical drive it is open to the objection that the shank on its two flat sides at the lower end of the spindle is unsupported with possibilities of vibration and wear between the shank and the spindle. To guard against this and at the same time to furnish a powerful drive at the lower end of the shank where its cross section is a maximum, a new and original type-

of socket known as the Paragon collet has been evolved.

This collet which forms the basis of the new drive consists of two lugs AA projecting upward from a flat disk in which a rectangular hole is cut to receive the drill shank. The outside surfaces of these lugs are rounded and ground to the standard taper while the flat inner surfaces are tapered to fit a flat taper drill shank. If the collet should stick in the spindle at any time, the point of a drift key inserted in the groove B will readily release it. When the collet is on the shank the combination gives practically an interchangeable taper shank with an unusually long tang. An extension C projecting from the circular base of the collet furnishes additional driving power. This projection mortises into a slot cut across the end of the spindle and conforms to standard forms now being supplied in the spindles of heavy duty drill presses. A glance at the engraving will show that this tongue and groove drive at the large end of the shank is much stronger than the

J. H. Williams & Co.'s No. 6 Shop

There is no heating problem connected with a forge shop; rather is it a problem of getting rid of the heat and adequate ventilation becomes very important. The latest addition to the works of J. H. Williams & Co., Brooklyn, N. Y., makers of drop forgings, known as the No. 6 shop, is unique for the arrangement made to dissipate the heat and has other features that make for the convenience and comfort of the workmen. The building itself, which is 50 x 100 ft., is of simple and inexpensive construction, its sole purpose being the exclusion of the elements. The sides are of corrugated iron supported by a steel frame. Under the eaves the height is 24 ft.; the roof is of five-in-eight pitch and is surmounted at the center by a monitor 10 ft. high. The high interior space and the ample monitor provide for the removal of the heat and gases, and a natural circulation is secured by that which is the most interesting feature of the building,

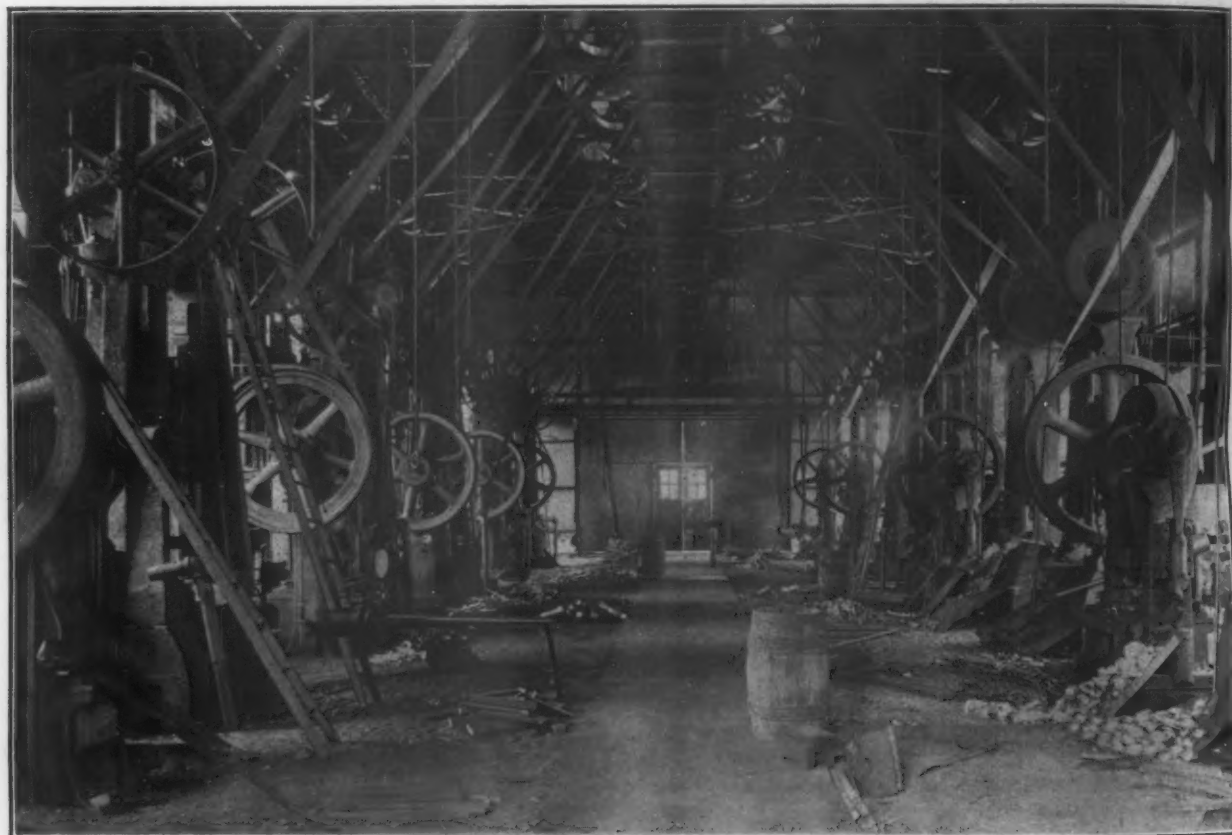


Fig. 1.—Interior View of the No. 6 Shop of J. H. Williams & Co., Brooklyn, N. Y.

drive on the tang. Without this extension the collets will fit any standard drill press spindle or socket and this type will be furnished to purchasers whose spindles are not fitted with slots when this requirement is specified. Of course this drive will not have the additional strength afforded by these extensions which seem to produce an almost perfect drive for large sized flat twist drills.

House Organs Desired.—The Free Public Library of Newark, N. J., of which John Cotton Dana is librarian, is making a collection of house organs in connection with the very large collection of catalogues of manufacturers which it now has in its technical department in the main library, with a selection from them in its branch for business men in the center of the city. This collection will be described in the near future in an illustrated article in one of the local newspapers of a large circulation. The library would like to get sample copies of house organs at least, and if possible to be placed upon the mailing list of all of them.

an opening entirely around the sides at the ground level and 18 in. high. In other words, the walls are not carried down clear to the ground. In severe winter weather, when so much opening might be uncomfortable, it can be entirely or partly closed in by frames which are made to fit in the openings.

The building contains six 3000-lb. hammers, five 1000-lb. and three 1500-lb. hammers. Five of these were built by the United Engineering & Foundry Company, Pittsburgh, Pa.; five by the Waterbury Farrel Foundry & Equipment Company, Waterbury, Conn., and four by the E. W. Bliss Company, Brooklyn, N. Y. They are arranged in two rows lengthwise of the building, leaving a wide aisle between, so that there is space for the stacking of completed product while it is cooling and for its ready removal through the large doorway at the center of one end. Alternating with the hammers are 12 trimming presses, part of which were built by the United Engineering & Foundry Company and part by the E. W. Bliss Company. The hammers handling the heaviest work are served by jib cranes, with Yale & Towne chain blocks for handling the work

between the furnaces and the hammers and presses. Each hammer has for a foundation 6 ft. of concrete resting on 16 piles driven down 27 to 30 ft. This extensive provision for a firm foundation was necessary, as the shop is located on filled ground and it was necessary to go to a considerable depth to insure stability.

The furnaces are all oil fired and it is interesting to know that in the seven or eight years that fuel oil has been used instead of coal it has been found not only cheaper than coal by some 25 per cent., but cleaner

assets at \$44,815.94, of which \$18,362.18 is machinery and real estate.

The Globe-Abbott Tumbling Barrel

A new horizontal tumbling barrel for burnishing with steel balls has been added to the line made by the Globe Machine & Stamping Company, Cleveland, Ohio. This, known as the Globe-Abbott tumbling barrel, is intended for burnishing articles that are to be plated and for polishing articles that have already been plated or others which it is only desired to brighten. One of the special advantages claimed for this barrel is that with it almost as fine a surface can be secured by burnishing as could be obtained by buffing, and that the process can be applied to small articles, which would be both difficult and expensive to buff. The machine is the outcome of long experiment on the part of its maker and is simple in construction, easily handled and has proved effective in doing the work for which it is designed.

The barrel is of cast iron, lined with maple wood, and has an octagonal cross section. The barrels are made in three styles, either single, double or triple. The driving pulley is 18 in. in diameter, with a 3-in. face, and runs at a speed of 60 rev. per min., while the barrel is driven through the gears, which have a ratio of 4 to 1 at 15 rev. per min. The cover can be removed and replaced very quickly and the cross bar shown on the cover passes under ribs projecting from the edge of the barrel, so that a slight turn of the cross bars either fastens or releases the cover.

The process of burnishing itself is extremely simple if ordinary precautions are taken. A safety valve is attached to the barrel to relieve the high pressure caused by the heat generated during the process of tumbling and thus preventing the barrel from exploding. There should always be enough steel balls, which range in size from $\frac{1}{8}$ to $\frac{1}{4}$ in. in diameter, in the

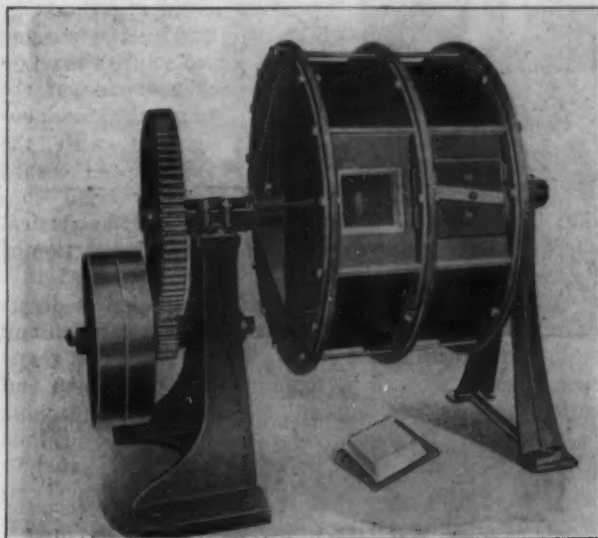


Fig. 2.—One of the Oil Fired Heating Furnaces Used in the Shop.

and more convenient from every standpoint. It is not necessary to keep the fires over night or over Sundays and holidays. The high temperature secured accomplishes the requisite heating of the work in shorter time and there is not the annoyance of handling coal and ashes. As far as the company has gone in tests with producer gas, although it does not claim its conclusions to be decisive, it has satisfied itself that oil is cheaper than gas and gives a higher furnace temperature. The furnaces are of the company's own design and are placed so that the heat issuing from their openings does not play on the backs of the operators. For the smaller work, however, where pieces are inserted and withdrawn more frequently, the furnaces are placed in the usual way, with the opening facing the hammer. The oil is atomized into the furnaces by compressed air obtained from one of the other shops. The usual jets of air blast for cooling the operator and for blowing scale from the dies are provided and are supplied through two blower systems, one on each side of the shop, each driven by a 20-hp. motor.

The hammers and presses are driven in four groups by sections of shafting running along the center at a considerable elevation and each driven by a 40-hp. motor. From these main shafts belts are carried diagonally to the countershafts directly over the machines. Under the motors and main shafts is a suspended runway reached by a ladder at one end, from which the motors are accessible for attention and the shafting for oiling.

William J. Harvey has been appointed receiver of the Keystone Nail Company of Pittsburgh, works at Rochester, Pa., and manufacturer of galvanized wire nails. The liabilities are estimated at \$65,000 and



A New Tumbling Barrel, Using Steel Balls, Made by the Globe Machine & Stamping Company, Cleveland, Ohio.

barrel so that the articles to be burnished do not rub against one another. A safe rule is to use two pails of balls for each pail of material, and the smaller the balls are the better and quicker the burnishing. A pail of hot water is needed for each pail of material, and before adding the water about 6 oz. of soap chips are dissolved in it.

The machines are made with three sizes of barrels, 24 in. in diameter by 8 in. wide, 30 in. in diameter by 8 in. wide and 30 in. in diameter by 16 in. wide, each being made with single, double or triple barrels. The machine illustrated is of the double barrel type, with the middle size of barrel, and weighs 1800 lb. The floor space occupied is 42 x 62 in.

The Frontier Drilling and Tapping Machine

A new machine for drilling and tapping which is being placed on the market by the Frontier Iron Works, Letchworth and Grant streets, Buffalo, N. Y., is illustrated herewith.



A New High Speed Geared 16-In. Drilling and Tapping Machine, Made by the Frontier Iron Works, Buffalo, N. Y.

While the tool in a general way follows the design of the Modern 20-in. drill press illustrated in *The Iron Age*, May 19, 1910, it embodies several new and practical features.

The driving gear mechanism is contained in a circular case shown in the head. On the driving shaft a disk $8\frac{1}{2}$ in. in diameter is mounted in which three rows of steel involute gear teeth are inserted and furnish the speed changes. The center row has 13, the middle 24 and the outside one 34 teeth. Two pinions with a clutch between are mounted on the spindle, and the pinions are held in position by yokes connected to a tube shown on the outside of the case, the clutch engaging with the pinion. Forward and reverse motion

is secured by the handle shown on the vertical shaft, a movement up or down changing the direction of the rotation of the spindle.

When used for drilling, the lower pinion is disengaged by lowering the yoke tube when it is between any two rows of teeth on the driving disk. Three changes of speed can be secured by moving the upper pinion and clutch together, and this can be done when the machine is in motion. Its capacity for drilling is a $\frac{3}{4}$ -in. hole and for tapping a $\frac{5}{8}$ -in. hole. The table is slotted so that jigs holding the pieces being drilled and tapped can be bolted to it.

The principal dimensions of the tool are as follows:

Diameter of column, inches.....	4
Height of drill, inches.....	78
Traverse of spindle, inches.....	$4\frac{1}{2}$
Maximum distance between spindle and table, inches.....	36
Diameter of spindle through sleeve, inches.....	$1\frac{1}{8}$
Morse taper of hole in spindle.....	No. 2

The tool is recommended as being especially serviceable for all kinds of manufacturing plants and repair shops and is guaranteed by the builder to do accurate work.

The Disposal of City Waste.—The Destructor Company, 111 Broadway, New York, has recently issued an attractive bulletin describing the 300 ton per day Heenan high temperature refuse destructor, which it has completed for the city of Milwaukee, together with a copy of the official tests of the apparatus. One

of these furnaces has also been in successful operation for over two years in the Borough of Richmond, N. Y., destroying the mixed collection in an absolutely sanitary and economical manner. The cities of Buffalo, N. Y.; Westmount, Canada, Seattle, Wash.; and Vancouver, B. C., also have high temperature destructors. The company is now installing a 60-ton plant at Montgomery, Ala.

The Steel Corporation's Quarterly Statement

The United States Steel Corporation has issued its statement of earnings, covering its subsidiary companies, for the quarter ending September 30, 1910. It compares as follows with the corresponding quarter of 1909:

	1910.	1909.
July earnings.....	\$12,132,188	\$12,530,770
August earnings.....	13,132,755	12,437,754
September earnings.....	12,100,244	13,278,383
Total after deducting all expenses incident to operations, including ordinary repairs and maintenance of plants, employees' bonus funds and interest on bonds and fixed charges of subsidiary companies.....	\$37,365,187	\$38,246,907
Less charges and appropriations for the following purposes:		
Sinking funds on bonds of subsidiary companies	\$760,907	\$506,717
Depreciation, reserve and extraordinary replacement funds.....	5,555,555	6,885,171
	\$6,316,462	\$7,391,888
Net earnings.....	\$31,048,725	\$30,855,019
Deduct interest for the quarter on U. S. Steel Corporation bonds outstanding	\$5,824,146	\$5,885,900
Sinking funds on the U. S. Steel Corporation bonds:		
Installments	1,012,500	1,012,500
Interest on bonds in sinking funds...	475,316	413,562
Balance	\$7,311,962	\$7,311,962
	\$23,736,763	\$23,543,057
Dividends for the quarter on stocks of U. S. Steel Corporation:		
Preferred, 1% per cent.....	\$6,304,919	\$6,304,919
Common, 1% per cent. (1 per cent. in 1909)	6,353,781	5,083,025
Surplus for the quarter.....	\$11,078,063	\$11,387,944
Less appropriation on account of expenditures made and to be made on authorized appropriations for new plants, construction, &c.....	7,500,000	10,000,000
Balance of surplus for the quarter.	\$3,578,063	\$2,155,113
Unfilled orders on hand September 30, tons	3,158,106	4,796,833

The earnings for the quarter ending June 30, 1910, were \$40,170,960, and for the quarter ending March 31 were \$37,616,876.

The unfilled orders June 30, 1910, were 4,257,794 tons, and March 31 were 5,402,514 tons.

An important use of concrete in engineering structures is exemplified in its adoption to strengthen the old wrought iron trestle approaches to the Danville, Ill., railroad bridge and also the St. Charles bridge. These structures which were built many years ago were constructed of Phoenix columns with diagonal tie rods and with the great increase in train weight, which has come about in recent years, it has become necessary either to strengthen the trestles or remove them altogether. The former course was followed and the columns encased in concrete. Tests of the compression members reinforced in this way show that the addition of the concrete has increased their strength fully 50 per cent.

The Banner Iron Works, St. Louis, Mo., now expects to have the 2-gross-ton side-blown Bessemer converter which it began to erect some time ago completed and ready for operation this month or next.

The Avey Ball Bearing Drill Press

A new type of ball bearing sensitive drill press in the design of which careful consideration has been given to securing the four essential factors of convenience, range, strength and speed has been brought out by the Cincinnati Pulley Machinery Company, Cincinnati, Ohio. Four different sizes, having one, two, three and four spindles, respectively, are built and the accompanying engravings show the single spindle or No. 1 machine. Fig. 1 is a general view of the tool and Fig. 2 shows the countershaft and the four-step cone pulley.

The model illustrated is designed to handle work up to the limit of the capacity of drills having a No. 1 taper shank, the largest size of which is 37-64 in. in diameter. The machine is ball bearing throughout and all the cones and ball races are of steel, hardened and accurately ground. The bearings are of the four-point contact type. This design permits the drill to be run at the maximum speeds which high speed twist drills are capable of, and at the same time requires the minimum of oiling and power.

The spindle of the machine is of crucible steel $\frac{7}{8}$ in. in diameter, ground and bored to conform to the No. 1 Morse standard taper. The spindle sleeve is graduated and a stop collar mounted thereon which may be set to drill holes of any predetermined depth, not exceeding the traverse of the spindle which is $12\frac{1}{2}$ in., without using a scale. This collar is held in place by a fixed clamp screw and thus no wrench or screw driver is required. Another advantage of this arrangement is that the vibration experienced when the stop collar is placed at the top of the spindle is said to be eliminated.

The construction of the rack, pinion and shaft for the feed lever in one solid piece is a decided advantage

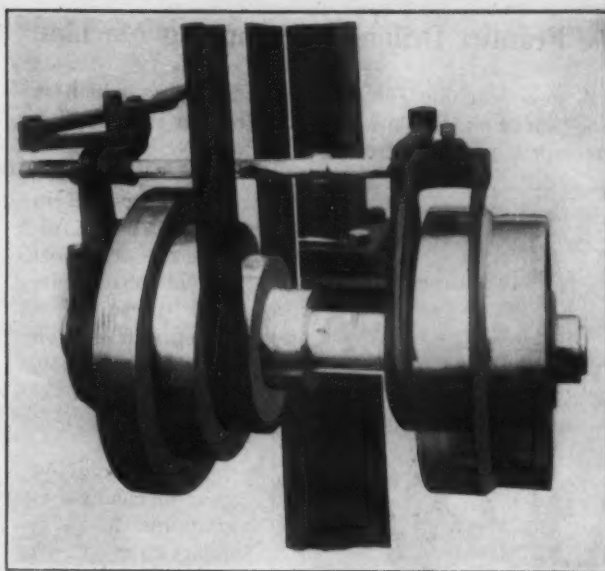


Fig. 2.—Detail of the Countershaft on the Avey Drill Press.

over the practice of using a sleeve held in place by a set screw as the strain is very great when heavy work is being done. The traverse of the feed rack is 5 in. The upper and lower columns and the countershaft brackets are tongued and grooved thus assuring alignment and interchangeability.

The drill has four changes of speed obtained from the four-step cone pulley on the countershaft shown in Fig. 2 which drives by a $1\frac{1}{4}$ -in. belt to a single pulley on the spindle. When changing speeds the adjustment of the belt is taken care of by a carriage on the back yoke in which two idler pulleys are mounted. The movement of this carriage is controlled by a screw feed regulated by the hand wheel just below the driving pulley on the spindle as shown in Fig. 1. The location of this wheel at a point most convenient for the operator enables adjustments to be quickly and conveniently made while it also possesses the advantage of securing a positive and precise belt tension. The slight changes in belt tensions required when changing from one size of twist drill to another are readily secured by a slight turn of the hand wheel.

The distance between the center of the spindle and the column face is the same in all four models namely, $6\frac{1}{4}$ in.; and the distance between spindle centers in the three multiple spindle types is 9 in. The working surface of the tables in the different models is 15 in. from front to rear in all cases and the length is 18, 25, 34 and 43 in. The weights of the four sizes of drill are 400, 550, 740 and 950 lb., respectively.

A complete and up to date edition of the revised French tariff has been prepared by the Bureau of Manufactures of the Department of Commerce and Labor, Washington, D. C. The usefulness of the work to business men in this country is enhanced by the fact that all tariff rates are given in our money and weights, as well as in the French units. Much practical information concerning customs formalities is included. Franco-American tariff relations during the last 20 years are discussed in the introduction. The new French law did not repeal preceding tariffs. It merely amended those sections that were deemed unsatisfactory.

London advices report that leading shipbuilders have offered to build vessels similar to the Mauretania and Lusitania for two-thirds of the initial cost of the Cunard flyers. The builders will also undertake that the cost of maintenance of the new boats shall be one-third less than the amount required to run the Mauretania or Lusitania.

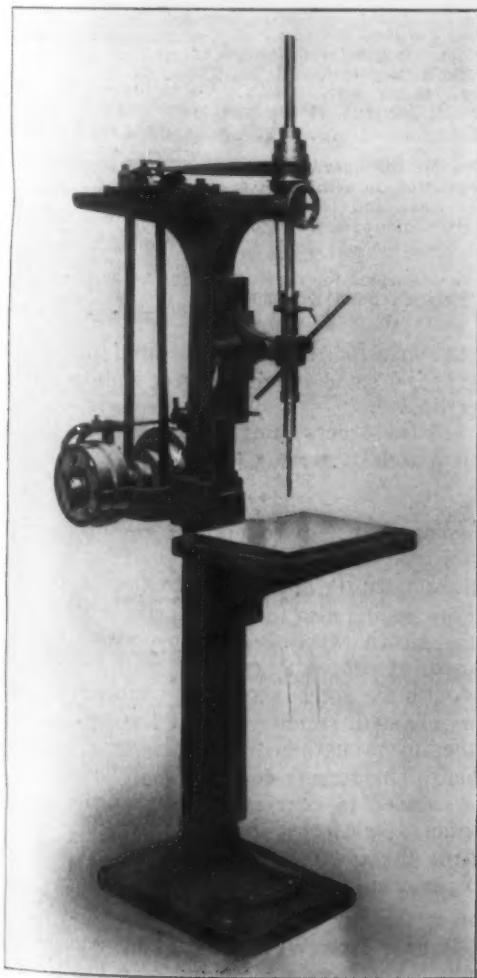


Fig. 1.—The Avey No. 1 Ball Bearing Drill Press. Built by the Cincinnati Pulley Machinery Company, Cincinnati, Ohio.

The Greaves-Klusman 15-In. Engine Lathe

A Machine Adapted for All Classes of Work

The 15-in. heavy standard engine lathe built by Greaves, Klusman & Co., Cook and Alfred streets, Cincinnati, Ohio, is illustrated herewith. This tool is said to embody in its design the latest and best ideas and while possessing ample power for heavy reduction work is also convenient and quick in operation on the lighter class of work, thus meeting the requirements of the manufacturing shop, tool room and repair

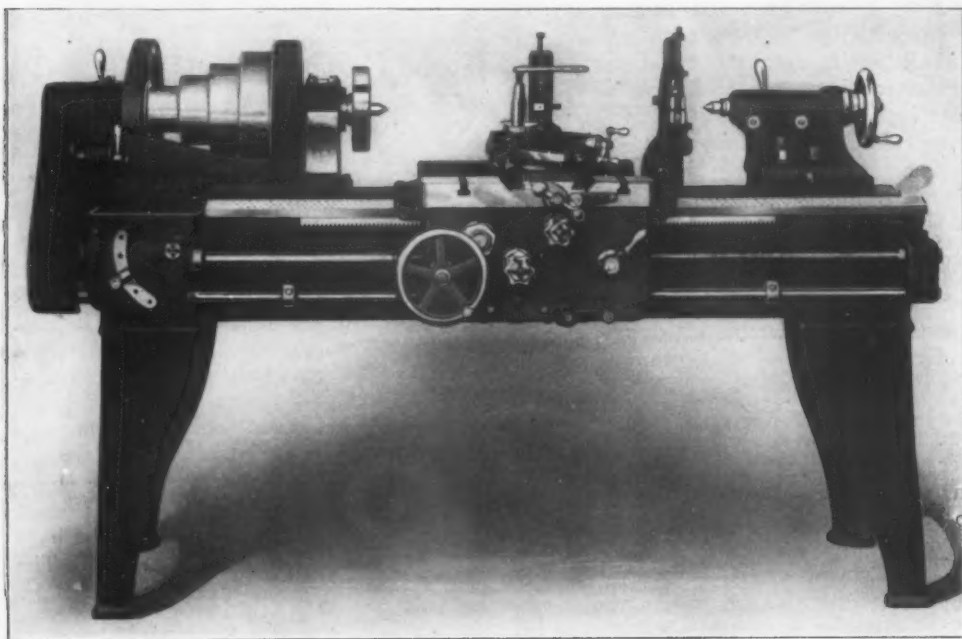


Fig. 1.—The 15-In. Heavy Standard Engine Lathe, Built by Greaves, Klusman & Co., Cincinnati, Ohio.

shop. The special features of the lathe are a new design of tailstock, a rigid double plate box apron and independent geared feeds. Fig. 1 is a general view of the lathe and Fig. 2 a sectional view of the tailstock, while Fig. 3 shows the double plate box type apron and Fig. 4 is a sectional elevation of the headstock showing the independent geared feed mechanism.

The sectional view of the tailstock, Fig. 2, shows

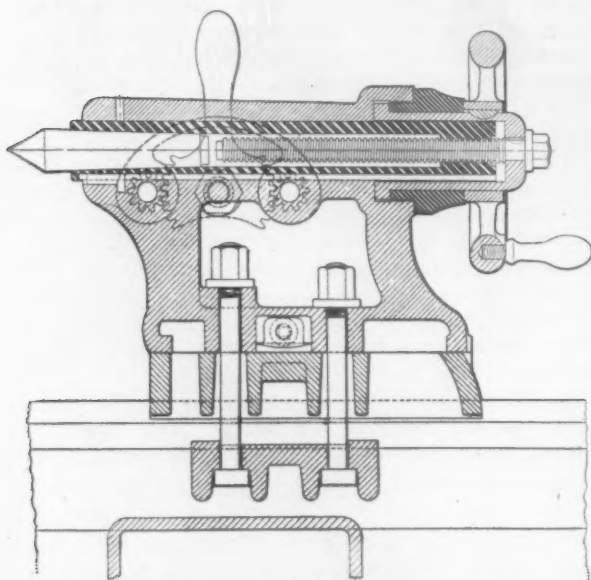


Fig. 2.—Sectional View of the Tailstock.

clearly the entirely new design and construction. This permits a spindle one-third longer than usual to be used which telescopes through a thimble at the rear

with a full length bearing in the barrel at the forward limit of its travel. The spindle is gripped by double plug clamps at both ends of the barrel making it more rigid than in the ordinary tailstock and this double clamping device is operated by a single handle. The very rigid double plate box construction of the apron with bearings at each end for the studs is apparent from an inspection of Fig. 3. All the gears are of steel with coarse pitch and the strength is equal to the driving power of the lathe. Frictions operate both the longitudinal and cross feeds which are reversed by the lever shown at the front of the apron and the feed rod and lead screw cannot be engaged at the same time. The feed rod is supported at each end of the

apron thus maintaining alignment and relieving the bearing of all strain due to sagging of the feed rod when the carriage is at either end of the bed. The rack pinion can be disengaged when the lathe is to be used for screw cutting which releases all gearing that would otherwise be running and adding to the friction of the carriage.

As shown by the sectional view of the headstock, Fig. 4, five independent geared feeds ranging from 10 to 160 in. per minute are instantly available, and these can be

changed while the tool is in operation. The steel feed gears are of coarse pitch and run in an oil bath. The feed mechanism is easy and simple to operate; the feed changes are obtained by shifting the feed lever which is conveniently located under the headstock at

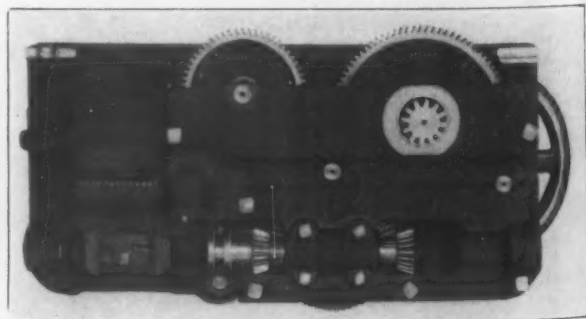


Fig. 3.—Rear View of the Double Plate Box Type Apron.

the right end. An automatic stop in either direction is also furnished for the feed rod.

The bed is very wide and deep and all twisting strains on the Vs are cared for by heavy reinforcements underneath them which extend the full length of the bed and also below the top of the girths. The side walls above the top of the girths are about three times as thick as below. The carriage is extra heavy with a full length bearing on each V and a wide flat bearing inside the outer one. This provides substantial support directly under the tool rest and shortens the bridge of the carriage which is of unusual width and depth. A conveniently operated eccentric clamp locks the carriage.

The headstock is massive, webbed throughout its

length and is not weakened to make room for the reverse plate. To eliminate overhang of the tool when turning large diameters, the center line of both head and tailstocks is placed back of the center line of the bed, which permits a deep web between the headstock housings and a large diameter cone pulley which gives exceptional driving power. The spindle is high carbon steel, ground, and runs in large phosphor bronze bearings.

The compound rest is very substantial. The cross feed and top slides have taper gibs and micrometer dials. For thread cutting the lathe is fitted with a chasing dial to permit the thread to be caught at any point without reversing the lead screw. This also enables both countershaft pulleys to run forward and pro-

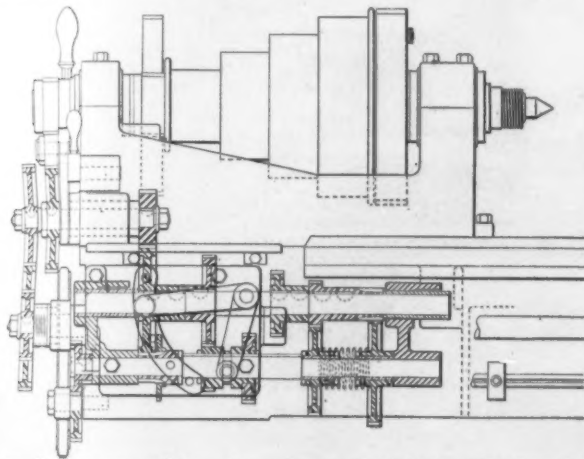


Fig. 4.—Sectional Elevation of the Headstock, Showing the Independent Geared Feed Mechanism.

vides a wide range of speeds. All threads from 2 to 48, including an $1\frac{1}{2}$ pipe thread, can be cut.

The following table gives the principal dimensions and specifications of the lathe:

Swing over bed, in.....	16 $\frac{3}{4}$
Swing over carriage, in.....	11 $\frac{1}{4}$
Distance between centers, in.....	36
Diameter front spindle bearing, in.....	2 $\frac{13}{16}$
Length front of spindle bearing, in.....	4 $\frac{1}{2}$
Diameter rear spindle bearing, in.....	2 $\frac{9}{16}$
Length rear spindle bearing, in.....	3 $\frac{1}{2}$
Diameter of hole through spindle, in.....	1 $\frac{1}{2}$
Diameter smallest step of cone pulley, in.....	4 $\frac{1}{2}$
Diameter largest step of cone pulley, in.....	10 $\frac{1}{2}$
Face of cone pulley steps, in.....	2 $\frac{1}{2}$
Width of driving belt, in.....	2 $\frac{1}{2}$
Ratio of back gears.....	12 $\frac{1}{4}$ to 1
Number of spindle speeds.....	16
Maximum spindle speed, rev. per min.....	510
Minimum spindle speed, rev. per min.....	5 $\frac{1}{2}$
Diameter of spindle nose, in.....	2 $\frac{1}{2}$
Length of spindle nose, in.....	2
U. S. standard threads on spindle nose, per in.....	6
Morse taper of centers.....	No. 4
Diameter of tailstock spindle, in.....	1 $\frac{13}{16}$
Length of tailstock spindle, in.....	13 $\frac{1}{4}$
Traverse of tailstock spindle, in.....	6 $\frac{1}{4}$
Length of carriage, in.....	24 $\frac{1}{2}$
Width of carriage bridge, in.....	6 $\frac{1}{2}$
Travel of compound rest, in.....	4
Diameter of countershaft pulley, in.....	12
Width of belt, in.....	3 $\frac{1}{2}$
Number of countershaft speeds.....	2
Minimum countershaft speed, rev. per min.....	170
Maximum countershaft speed, rev. per min.....	200
Size of tools taken, in.....	$\frac{3}{4}$ x 1 $\frac{1}{2}$
Weight of machine on skids, lb.....	2,100
Weight boxed, lb.....	2,500

The regular equipment furnished with the machine includes compound rest, large and small face plates, steady and follow rests, set of change gears, countershaft with two self-oiling pulleys and self-oiling hangers, and wrenches. If desired a plain rest can be substituted for the compound one. Other accessories such as a taper attachment, a turret on the carriage or shears, an oil pan bed, oil pump and tubing and draw-in collet attachment can be furnished at a slight additional cost.

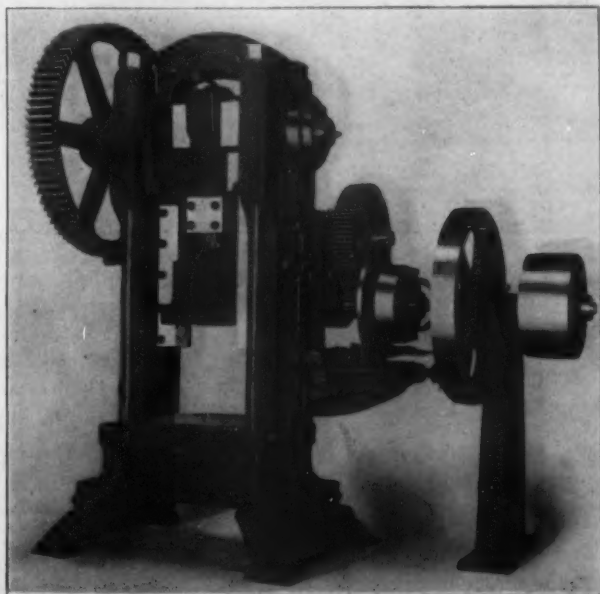
Gas Appliance Exhibition.—The National Commercial Gas Association will hold an exhibition in Boston,

Mass., from December 5 to 13, inclusive. It will be held in the Mechanics' Building, Huntington avenue. A circular from R. C. Ware, chairman of the Exhibition Committee, 24 West street, Boston, gives full information relative to the charge made for spaces and regulations regarding the shipments of exhibits. It is claimed that an exceptionally good opportunity is here offered for manufacturers of gas engines to get in touch with the gas men of the country, especially if an exhibit is made of an operating gas engine and gas furnace. The scope of the exhibition covers all kinds of gas appliances. It is held purely in the interests of the gas industry.

The Niagara Double Back Geared Power Press

A straight sided press made by the Niagara Machine & Tool Works, Buffalo, N. Y., is shown in the accompanying illustration. One of the special features of this tool is an automatic friction clutch designed for presses handling heavy work, which controls the motion of the machine.

The Niagara friction clutch employed possesses a number of novel features. Ordinarily a drop weight is used to throw the friction clutch into engagement and frequently does not exert enough force to fully engage the clutch and prevent its slipping while the press is



The No. 512 Power Press with Automatic Friction Clutch, Made by the Niagara Machine & Tool Works, Buffalo, N. Y.

working. Other objections are that undue wear on the clutch parts is caused and the press may not go over the center. In the new clutch no drop weight is used and it is thrown into engagement by a positive mechanism consisting of a series of links and levers, which causes the clutch to be fully engaged before the press commences to work.

The clutch can be tripped either by the foot treadle, in which case the motion will stop at the highest point of the stroke after making a complete revolution, or it can be operated by a hand lever. When the latter is the case the motion of the slide can be stopped or started at any point of the up or down stroke. Moving the upper end of the clutch operating rod out of line with the upper cam slide serves to disengage the power mechanism.

The press, known as No. 512, is a straight sided double back geared press, with four steel tie rods in the frame. The distance between the uprights is 28 in. and the ratio of gearing is 25 to 1. The net weight of the machine is approximately 30,000 lb.

The Style C Hammer Core Machine

The latest core making machine to be added to the Hammer line made by the Brown Speciality Machine Company, Chicago, Ill., is the style C which is illustrated herewith. Fig. 1 is a general view of the machine, and Fig. 2 is one showing the interior after the hopper cover has been removed.

The machine is of the same general type as the other styles of Hammer core machines which have been on the market for the last 10 years, but the distinguishing feature is the addition of back gears which when in mesh give a ratio of three turns of the power wheel to one of the bit. These gears are meshed when making cores larger than 3 in. and for those 3 in. and

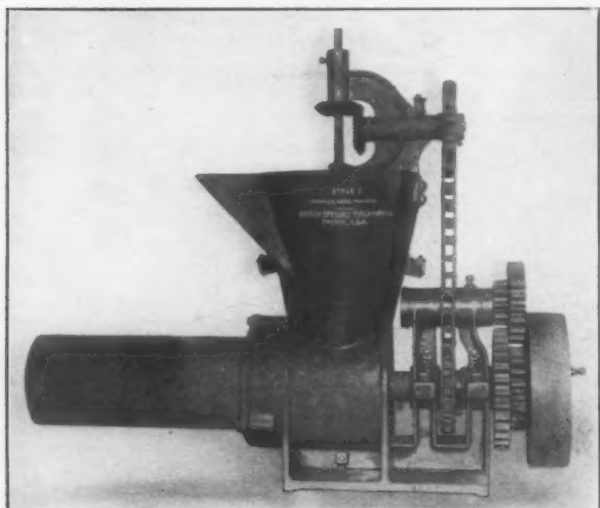


Fig. 1.—The New Style C Hammer Core Machine Made by the Brown Speciality Machine Company, Chicago, Ill.

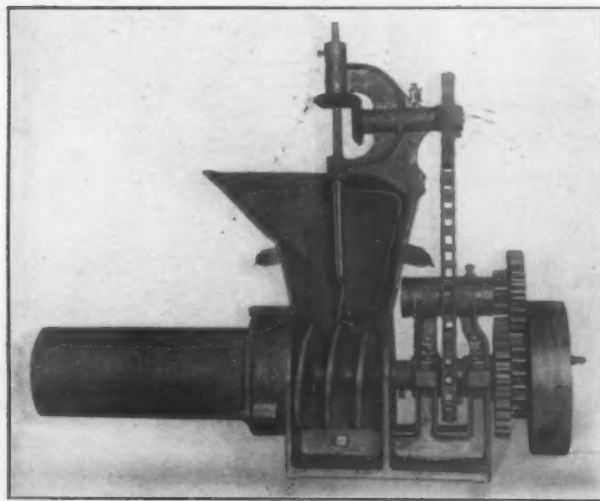


Fig. 2.—View of the Machine with the Hopper Cover Removed.

smaller, the gears are not meshed and the power wheel and bit are directly connected.

Fig. 2 shows the machine with the hopper cover removed. The vertical force feed shown in this engraving is applied in the same way as in the former machines and to this feature the success of the Hammer core machine is said to be largely due. This vertical force feed assures a continual and uniform supply of sand which eliminates the formation of soft spots in the core and the clogging of sand in the hopper is prevented and is one of the patented features of the Hammer machines.

The cores are vented by a pin which is machined on each bit. This is also a patented feature and is said to be the most efficient way known for venting stock cores. The output of this machine includes round cores, the diameters of which range from $\frac{3}{8}$ to 7 in.

and square cores measuring from $\frac{3}{8}$ in. to 5 in. on a side. With special dies, round cores as large as 11 in. in diameter can be made as well as rectangular ones $7\frac{1}{2}$ in. square.

The Newton Duplex Rod Boring Machine

Larger Output and Increased Rigidity of the Spindles Are Two of Its Features

A new design of duplex rod boring machine has been recently developed by the Newton Machine Tool Works, Inc., Twenty-fourth and Vine streets, Philadelphia, Pa., and is illustrated herewith. It was specially sought to secure a maximum output from high speed steel tools and by increasing the rigidity of the spindle supports to adapt the machine to boring a greater variety of parts than the former designs. Fig. 1 is a general view of the machine and Fig. 2 shows the same machine with the gear guards removed.

As will be noticed from the engravings, the body of the machine proper consists of a massive base the top surface of which is machined and slotted for the reception of bolts. This is used for the working surface and measures 16 ft. $6\frac{1}{2}$ in. long by 24 in. wide and is surrounded by an oil pan. Three uprights of massive proportions are attached to this base and support the rail which is of box type construction and of exceptionally heavy section internally braced by a large number of heavy ribs. This rail also serves as a reservoir for the lubricant.

The section of the spindle saddle is also very heavy and it has an angular bearing on the lower surface of the rail, thus insuring a closer contact with heavier pressures and the top bearing is a square one, the adjustment being made by a bronze taper shoe on the top and at the rear by a gib bolted to the saddle. The adjusting nut is shown at A in Fig. 1 fitted to the hook bolt engaging the inside of the shear to hold the saddle in any predetermined position on the rail and at B is shown the pinion, the solid end of which is squared for the fitting of a removable ratchet for adjusting the saddle crosswise.

The spindles are each $4\frac{1}{4}$ in. in diameter and revolve in bushed bearings in the sleeve which has a bearing of $28\frac{1}{2}$ in. over all. The outer diameter of the sleeve is $5\frac{3}{4}$ in. and the length of the spindle feed and hand vertical adjustment is 16 in. A No. 6 Morse taper is fitted on the spindle. The drive for the spindles is by a worm and worm wheel, the former of hardened steel with roller thrust bearings and the latter of bronze with teeth of steep lead, both being encased for continuous lubrication. An extension of the spindle fitting in the rack sleeve revolves in brass bushings and presses against a fiber washer which takes the thrust. The upper end of this spindle and rack sleeve are encased and protected from dust and dirt by the cover C which also serves as a support for the counterweight. An important feature of this design is that the thrust of the driving worm is taken by bearings cast solid with the saddle.

For ordinary work the drive is through spur gears from the four-step cone pulley at D and where desired back gears for motor or belt connection are placed which give a spindle rotation having a range of 10 to 1. When motor driven, a General Electric type CQ 10 10-hp. 220-volt motor having a speed range of from 400 to 1200 rev. per min. has been employed. This enables stud pin holes to be drilled and the projections for oil cups to be finished both externally and internally, which is a very valuable feature in repair shops which do not have enough boring to keep the machine busy on the one operation. Motion for the feed is taken through spiral gears, one of which is mounted on the spindle sleeve at F and the other is keyed to the hori-

zontal pull pin shaft at G. Four pull pin gears, giving the same number of changes of feed which range from 0.0023 to 0.0118 in. per revolution of the spindle, are mounted on the shaft and this motion is transmitted to the rack sleeve through the worm and worm wheel H and I, respectively. This feed motion is clutched at H by a tooth clutch which enables either power feed or hand elevation to be used.

The saddles can be adjusted on the rails from a

Several of these machines are in use at the present time. Some of the work done by them includes boring 10-in. holes through both ends of a 5-in. rod simultaneously. This was done in 20 minutes at one cut, the second operation being a reaming cut which completed the boring.

Merger of German Electric Companies.—In 1900 there were seven large electrical manufacturing companies in Germany, which in the early

part of 1909 had been reduced through consolidation to four. Recent foreign advices indicate the beginning of a further combination of German electrical engineering industries. It is reported that the Zurich Bank for Electrical Enterprises, which was originally formed as an investment and promoting concern by the Allgemeine Elektrizitäts Gesellschaft of Berlin, recently made an offer for an exchange of stock with the Lahmeyer Electric Company, which offer has been accepted. This company holds \$4,000,000 in stock of the Felton and

Guillaume-Lahmeyer Werke, so that it is seen that the Allgemeine Gesellschaft, through the Zurich Bank for Electrical Enterprises, has obtained an interest in the heretofore independent company, although

minimum distance between spindle centers of 30 in. to a maximum of 11 ft. 4 in. The distance from the table to the bottom of the spindle in its highest position is 25½ in. At J is clearly shown the auxiliary support for the spindles which has a bearing on each upright and is provided with hand elevation through a worm and worm wheel* by the mechanism at this point. The particular purpose of this bearing is to support the spindle securely at its lowest possible point when cutting, which permits modern cup cutters capable of taking cuts from ½ to ¾ in. to be used when boring the rods. This eliminates the necessity of drilling a pilot hole and saves the center which can be used later as a body for inserted tooth cutters or for gear blanks.

The floor space required by the machine measures 14 ft. 2 in. by 5 ft. 5 in. and the approximate net weight is 28,500 lb. The machine is furnished complete with pumps, piping and attachments for lubrication and the lubricant is delivered to the cutters by the floating pipes shown at L.

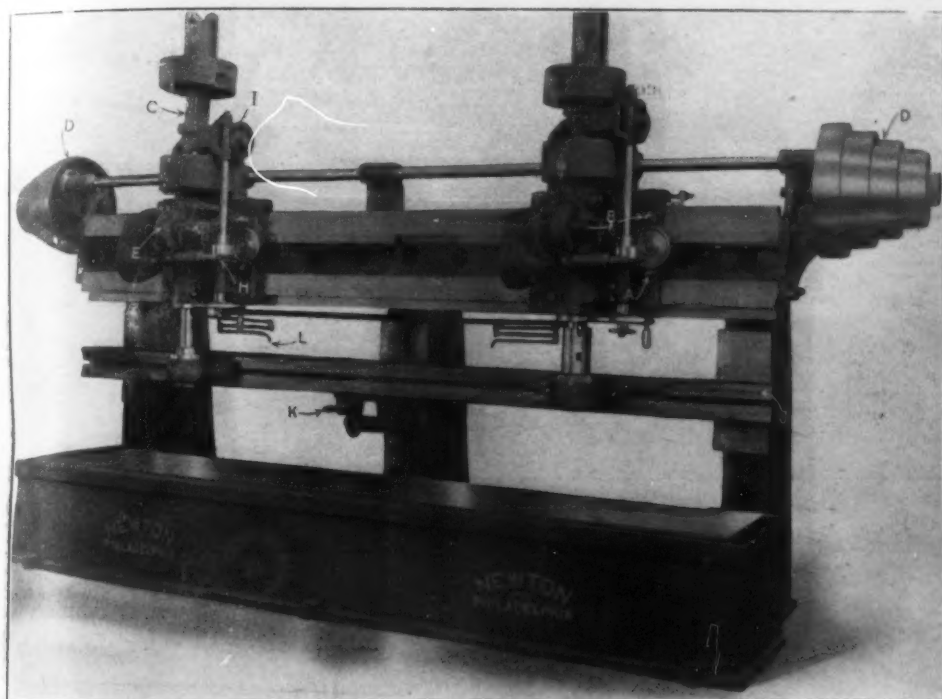


Fig. 1.—A Special Duplex Machine for Boring Rods Built by the Newton Machine Tool Works, Inc., Philadelphia, Pa.

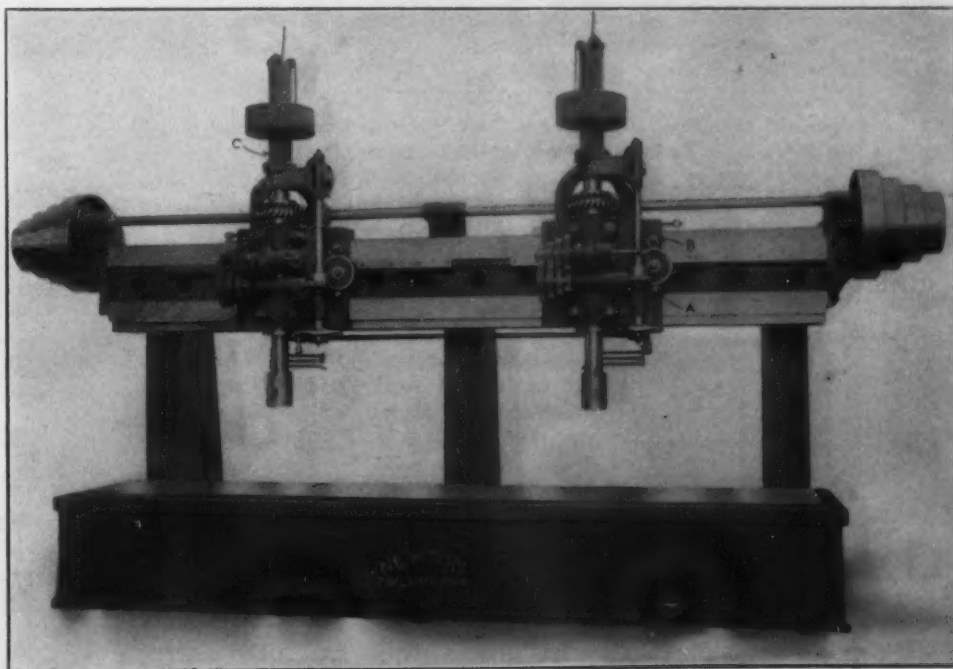


Fig. 2.—A Partly Assembled Machine, Showing the Heads Without Their Gear Covers.

not a controlling one, as the total capitalization is about \$13,750,000. Other consolidations are reported to be in progress which when completed will reduce the seven independent electrical companies of a decade ago to two. The situation as it now exists in Germany very much resembles that in this country.

The Lodge & Shipley Axle Drilling Lathe

Equipped with a Special Attachment to Revolve the Drill

An interesting special drilling attachment has been recently completed by the Lodge & Shipley Machine

Tool Company, Cincinnati, Ohio, which is illustrated herewith. Figs. 1 and 2 are front and rear views respectively of one of its 30 in. by 30 ft. motor driven patent head lathes fitted with the attachment for drilling 4-in. holes longitudinally through the centers of steel axles 10 in. in diameter, and Fig. 3 is a detail of the special steady rest employed.

The special drilling attachment is mounted upon the carriage of the lathe, and consists of a heavy bracket with a train of gears driven from a direct connected adjustable speed 4¾-hp. motor. All of the gears are completely covered to protect the operator, and in Fig. 1 some of the gear covers are removed to show the gearing of the headstock and the special drilling attachment on the carriage better. The main driving shaft in this bracket carries the drill and is in exact alignment with the lathe spindle.

To care for the unusual end thrust required in driving a 4-in. drill, the headstock has a special tie piece across the top which is fastened to the caps of each of

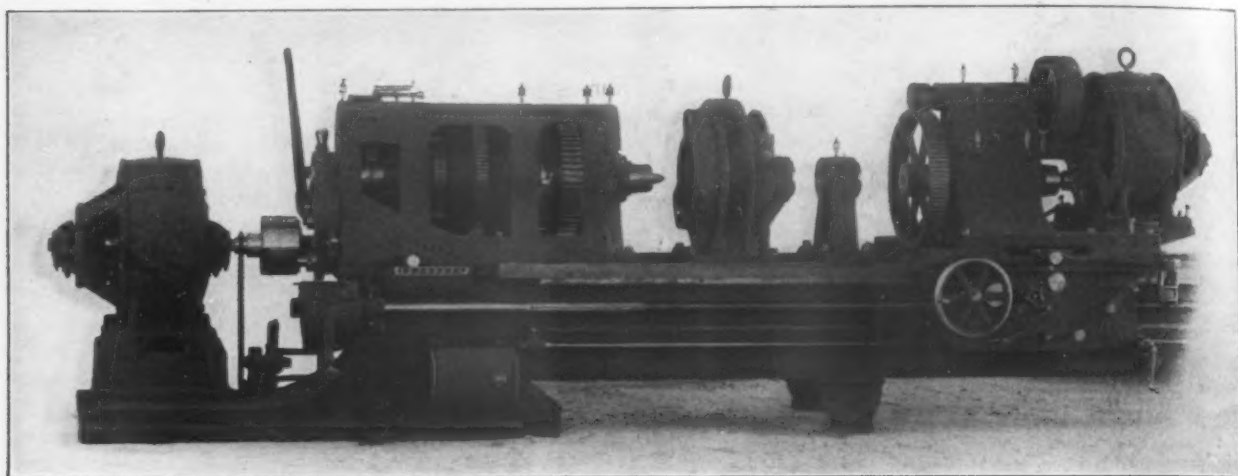


Fig. 1.—Front View of the Lathe with Gear Covers Removed.

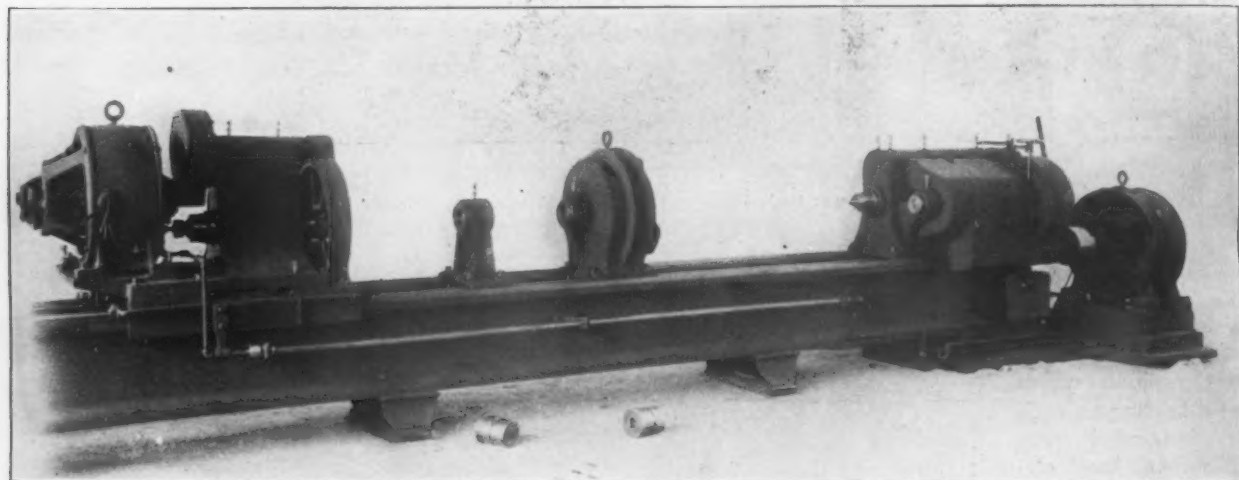


Fig. 2.—Rear View, Showing Lubricant Pump and Piping.

Two Views of a 30-In. Lathe Equipped with a Special Axle Drilling Attachment, Made by the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio.

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To care for the unusual end thrust required in driving a 4-in. drill, the headstock has a special tie piece across the top which is fastened to the caps of each of the four headstock bearings. The use of this tie plate furnishes support for the bearings from above as well as below, thus keeping them in position. Six mechanical changes of speed are available by gearing in the headstock, and these are doubled by a 2 to 1 speed variation in the 10-hp. main driving motor. The front and rear covers of these gears are bolted to either side of the tie piece.

In operation one end of the axle to be drilled is gripped in a chuck, which is not shown on the lathe spindle, and the other end is carried in the special steady rest shown in Figs. 1 and 2, between the headstock and the carriage, and in detail in Fig. 3. The portion of the steady rest carrying the end of the axle has a large annular bearing, *a*, within the circumference of the rest, so that this portion revolves with the axle. The other side of the rest supports the drill in a bushing, *b*, which revolves with the drill. The bushing shown in place is for a 4-in. drill, while those on the floor in Fig. 2 are for a 2-in. drill. A drill rest and guide with a revolving bushing to support the drill approximately at its center is employed between the steady rest and the carriage. Although these drill bushings are free to revolve, endwise movement is prevented by a set screw, the tip of which enters an annular groove

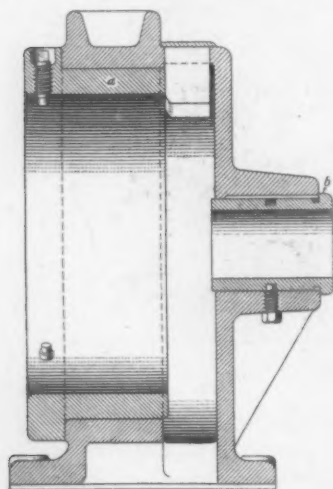


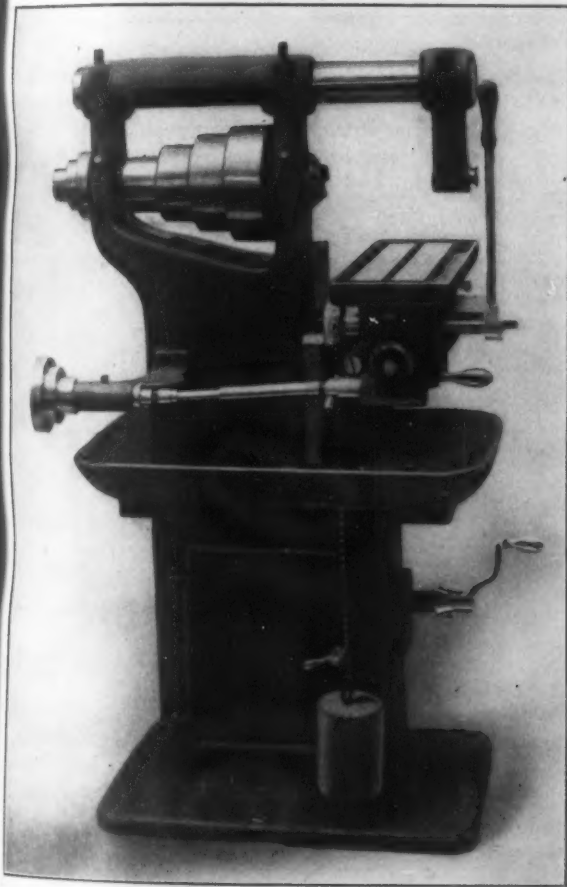
Fig. 3.—Details of the Special Steady Rest.

around the center of the bushing. In this way the work revolves in one direction, and the drill in the opposite one which gives great accuracy and high productive speed.

The arrangement of the pump and piping of the lubricating system is shown in Fig. 2. The former is placed near the end of the headstock, and is positively driven from the motor shaft by a chain. This pump forces the lubricant through the piping at the back of the bed and up to the center of the main driving shaft of the drilling attachment. From here it passes through the drill itself and is discharged at its tip. The joint in the piping just below the carriage is fitted with a stuffing box, so that the rear section of pipe telescopes the adjoining one, thus making a good joint and insuring proper lubrication of the drill regardless of the position of the carriage. A pan, which is not shown, extends under and around the whole machine and retains the lubricant and chips.

The Bickford & Washburn No. 1 Miller

To meet the demand for a plain milling machine of medium size and price, Bickford & Washburn, Inc., 12



The New No. 1 Milling Machine, Built by Bickford & Washburn, Inc., Greenfield, Mass.

Chapman street, Greenfield, Mass., have designed the No. 1 milling machine illustrated herewith. It embodies several features which should appeal to manufacturers who desire to increase the efficiency of their equipment. Among these are a novel type of power feed and quick return of the carriage when the feed stops.

The table drops $7\frac{1}{2}$ in. from the center of the spindle and has movement in three directions, the distances being 15 in. horizontally, 7 in. vertically and 3 in. transversely. The working surface of the table measures $8 \times 23\frac{1}{2}$ in. The spindle is bored for a No. 10 Brown & Sharpe taper and runs in bronze bearings which have adjustment to compensate for wear. Graduated collars free to set in any position are provided

for the elevating and cross feed screws. The entire feed mechanism is protected by a guard which is not shown in the illustration. The table has a large oil channel extending around it and the outer edge is planed off flush with the platen which has a T slot for a $\frac{5}{8}$ -in. bolt through its center. Either a drip oil cup or a pump is furnished for the machine in which case the tank will be placed in the base.

One of the novel features of the machine is the use of a rack which is a quarter section of a screw and is constantly in mesh with a worm gear. This gives a smoothness of cut which is claimed not to be found in the ordinary rack feed machine as the tendency to chatter is prevented by the curved teeth of this peculiar form of rack. The worm gear is driven by a short worm wheel and gear from the feed shaft which is of the regular type.

Another special feature is the provision for a quick return of the carriage when the feed stops. This is very desirable at many times especially when the machine is used on such work as fluting taps or reamers. The quick return is accomplished by a short drum on the cross shaft which has a worm gear meshing with the rack. As this drum revolves it winds up a wire cable attached to a suspended weight which when the feed is released immediately falls and, unwinding the cable, returns the machine table. The exact place at which the table will stop is determined by a special clamp which makes it easy to adjust the length of the wire cable.

A crank handle is used interchangeably on the elevating screw and the cross and table feeds; the latter have a device for keeping the crank from falling off. A hand lever is also furnished for use on the feed shaft to provide hand feed for light rapid work.

The main driving belt of the machine is $2\frac{1}{2}$ in. wide and the feed belt 1 in. wide. The net weight of this machine is 900 lb. and at the present time the makers are working on patterns for a No. 2 machine which will be almost identical with the one illustrated, but the weight will be approximately 600 lb. greater and it will have back gears.

The Cost of Motor Cars.—A most interesting tabulation of prices in connection with the automobile industry has been made public by the Association of Licensed Automobile Manufacturers. It is a careful compilation of figures recorded by the association for each year since 1903, and gives the average price of automobiles for each year since that time. It increased from 1903 to 1907, but since then has gradually declined not because of any radical reduction in the price of individual makes, but by the great increase in the number of cars selling at \$1500 or less. The figures tend to show that the trend in manufacturing has been to give more each year for the same list price than to make any great cut in the selling figure. There has been a tremendous increase in the making of what are termed moderate priced cars and a normal and healthy increase in the number of the higher priced machines produced. From \$1133.37, the average price for cars in 1903, the figures increased to \$2137.56 in 1907, and since this time decreased until the first six months of the present year show \$1545.93 as the average retail list price of cars.

The fourth annual convention of the Iron and Steel Electrical Engineers, held at the Hotel Schenley, Pittsburgh, last week, elected officers as follows: Lew R. Palmer, electrical engineer of the South Side plant of the Jones & Laughlin Steel Company, president; E. R. Shover of Youngstown, Ohio, vice-president; C. W. Parkhurst of Johnstown, Pa., second vice-president; E. W. Yearsley of Sparrows Point, Md., treasurer, and John Farrington, secretary. The latter two were re-elected.

The Stockbridge 16-In. Back Geared Shaper

The new 16-in. back geared shaper of the Stockbridge Machine Company, Worcester, Mass., shown in the accompanying engraving, was designed for tool-room work, as well as for use as a productive shop tool from which hard service is required. The machine is of heavy, rigid construction, weighing 2850 lb., and embodies several new ideas, conspicuous among which is the manner of attaching the cross rail to the column, patterned after that familiar in milling machine practice. In this construction one gib is cast solid with the cross rail, thus adding to its stiffness as well as obviating the possibility of its tipping away from the column when the adjusting gib on the working side of the machine is loosened. No time is lost in going around the machine to tighten and loosen binder bolts when the cross rail is lowered or raised, since when the gib binder screws on the working side of the shaper are tightened the cross rail is locked to the column.

The rocker arm is of special design. The slide ribs



A New 16-In. Back Geared Shaper Built by the Stockbridge Machine Company, Worcester, Mass.

are of cored U-shape, to secure added strength, while the slot in the rocker arm is of exceptional depth and width to provide a large surface for the crank block. The ram is carried around in a semicircle on the top and the sides are built straight down, which, combined with internal ribbing, insures strength and stiffness. The head is graduated and can be adjusted to any angle, being locked in place by two bolts, one at either side. Taper packings running the entire length of the column and adjustable from either end by screws provide for any wear in the ramways.

The cross feed is automatic in either direction and adjustments may be made while the machine is in motion. The cross feed is so constructed that there is no necessity of changing the position of the cross feed rod when it is desired to reverse the direction of the feed. The reversing is accomplished by moving the block in the slide to one side or the other of the center, the slide having a reciprocating motion. The bar screw is fitted with a graduated collar reading to 0.001 in.

Either hand or automatic down feed of the head is furnished. The head slide has a graduated collar reading to 0.001 in., and can always be set at zero, regardless of the position of the screw. The base of the machine extends out well in front and has slots for strapping work. An angle iron is provided for bolting

to the base, which carries a sliding upright that adjusts itself automatically to the height of the knee and, setting up two bolts, locks the slide in position. In conjunction with this the knee is hooked over the saddle, which takes the forward thrust, that otherwise would come on the bolts that fasten the knee to the saddle. The former is raised and lowered by bevel gears and a telescopic screw having ball thrust bearings.

The cone pulley is supported on a self-oiling bearing built out from the side of the column. All the pull of the belt comes on this bearing, thus relieving the driving shaft from this strain. The driving shafts are carried through the column and are supported at either end by self-oiling bushed boxes. All the change gears are steel. The four-step cone pulley with back gears gives eight changes of ram speed.

The details of the machine follow:

Length of stroke, inches.....	10 1/2
Vertical travel of table, inches.....	14 1/2
Horizontal travel, inches.....	23
Minimum distance between ram and table, inches.....	2 1/2
Maximum distance between ram and table, inches.....	17
Head feed, inches.....	8 1/2
Working surface of table top, inches.....	14 1/2 x 13 1/2
Length of ram bearing in table, inches.....	30
Length of ram, inches.....	36
Width of ram bearing in column, inches.....	10 1/2
Speed of countershaft, revolutions per minute.....	300
Weight of machine, pounds.....	2,850

In common with the 24-in. shaper illustrated in *The Iron Age*, March 24, 1910, and all the others made by this company, the machine is equipped with the Stockbridge two-piece crank. This crank, it is claimed, delivers all the power developed by the driving shaft to the tool point and in addition secures an even cutting speed throughout the length of the cut, with a quick return of between three and four to one. No jar is sustained by the machine due to this high rate of return, as the speed, while great during the middle of the stroke, is gradually accelerated and retarded by the construction used and the stroke is thus reversed easily and smoothly.

The Seymour Mfg. Company Enlarging

The Seymour Mfg. Company, Seymour, Ind., has completed plans for building a large addition and making other improvements which have been found necessary on account of its increasing business and the addition of several new lines. The new building will be 50 x 300 ft. and will be of fireproof construction throughout, with fire hydrants installed at various places about the building.

When the improvements have been completed all the machinery will be removed from the present factory building, which will be converted into a warehouse. The spoke department will be transferred to a building on an adjacent street, which will also be remodeled and arranged to accommodate a large amount of machinery. The new building will be equipped for the manufacture of grain cradles, posthole diggers, scythe snathes and other tools. The power plant will be moved nearer the present building and the machinery in the departments in which the metal tools are manufactured will be operated by motors. Upon completion of the new buildings the company will have over 33,000 sq. ft. of floor space, and the capacity of the factory will be enlarged about one-third. The new equipment to be installed will not be purchased until spring.

The Best Mfg. Company, Pittsburgh, has awarded a contract for the installation of a complete industrial track system at its new plant at Oakmont, Pa., to C. E. Brosius, Pittsburgh, representative of the Atlas Car Mfg. Company. The installation includes 2000 ft. of track, turntables, switches, mill cars and equipment.

Tool Steel Welding

An Economy Possible in the Use of High Speed Steel

BY WILLIAM F. STANTON.*

The use of high speed steel for lathe and planer tools by progressive machine shops is so general that it is hardly necessary to touch upon its economy as a time and money saver in comparison with the ordinary carbon steel tools used before the process of making high speed steel was known. The principal objection to its use lies in the initial cost, which is so much greater than the ordinary tool steel that even now some shops still use the old style tools. A number of experiments have been made in welding high speed to ordinary machinery steel, and it was only a little over a year ago that the problem was solved. At a recent meeting of the Master Blacksmiths' Association at Niagara Falls, the matter was up for discussion and there was considerable argument both pro and con. Many of the delegates were not convinced that the method described was a success, and quite a number also confused it with the proposition of brazing high speed steel on machinery steel, which makes it impossible to put a tool made by this process back into the furnace for retempering.

For the past nine months the writer has been welding a cutting edge of high speed steel on tools made from common machinery steel costing less than 4

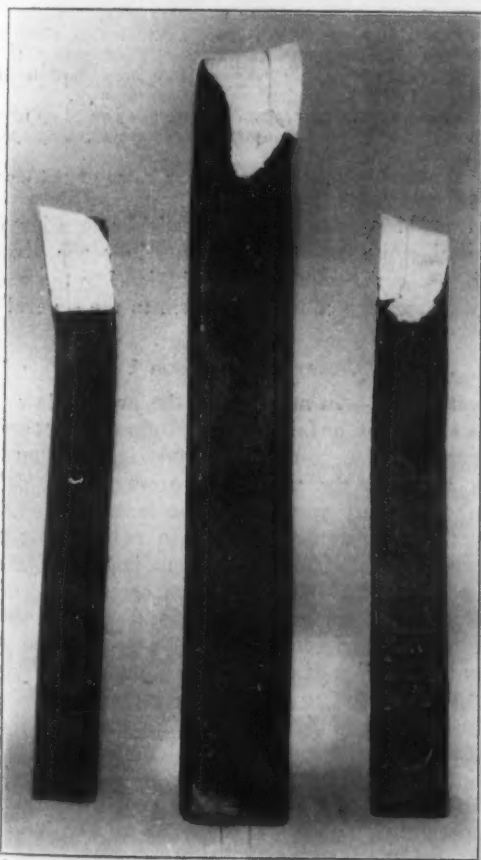


Fig. 1.—Lathe and Planer Tools, Consisting of a High Speed Steel Cutting Edge Welded to a Body of Machinery Steel, Made at the Shops of the J. A. Fay & Egan Company, Cincinnati, Ohio.

cents per pound, in the shops of the J. A. Fay & Egan Company, Cincinnati, Ohio. Fig. 1 shows some lathe and planer tools made in this way by welding to common steel a piece of high speed steel made from the butts or ends of tools which have become too short for use in the tool posts. In this time very little has been

spent by this company for high speed steel, as there was on hand a large accumulation of discarded tools that ordinarily would have been sold for scrap.

In making tools by this process the first step is to cut a piece of ordinary machinery steel along the

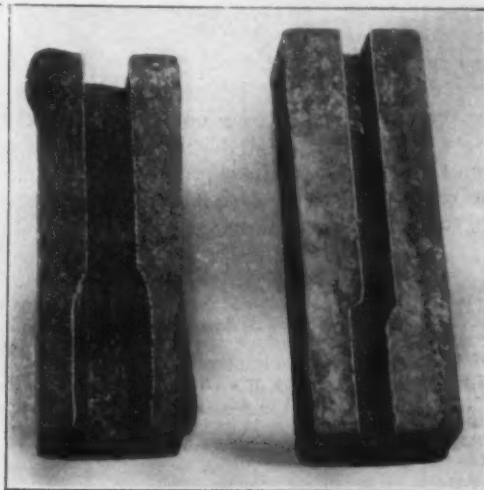


Fig. 2.—The Iron Molds in Which the Tools Are Placed After They Have Been Heated.

curved line shown at the upper ends of the tools in Fig. 1 and a piece of high speed steel shaped to fit this cut. The bar of common steel is brought almost to a white heat, a flux is applied and the piece of high speed steel is laid in place cold. In a few seconds this piece of high speed steel will adhere sufficiently, so that the tool can be replaced in the furnace and the whole brought back to a fluxing heat. When this heat has been reached the tool is placed in a cast iron form of the same shape as the tool, as shown in Fig. 2. Pressure is applied to the piece of high speed steel with an ordinary screw press until the welding heat is gone, or for about 30 sec. The tool can then be tempered and ground exactly the same as if the whole piece was of high speed steel.

At first, following the example of previous experiments, a Lafitte welding plate was used, but recently satisfactory results have been obtained with several ordinary fluxes. As will be noticed from Fig. 1, the weld shows plainly and at first the writer had many misgivings as to the success of the experiment, but after welding over 400 tools, with very few failures, he is convinced that as a money saving proposition it is something that should not be overlooked by shops in which there are a number of lathes, planers or shapers. A few ounces of steel costing, perhaps, 85 cents per pound, will put a cutting edge on a tool that will answer the purpose just as well as if the whole tool was made of the same material, and when this is worn off the process can be repeated as often as desired without entailing considerable work by the blacksmith. The whole secret of the process lies in welding by compression instead of concussion, which is the ordinary way, and applying the piece of high speed steel when it is cold to the machinery steel when the latter has been brought almost to a white heat.

Many members of the American Institute of Mining Engineers sailed October 21 from New York on the Prinz August Wilhelm for a special trip to the Panama Canal Zone. The regular technical session will be held on board during the voyage. Numerous papers will be read and regular business transacted. A stop of nine days will be made on the Isthmus. The itinerary includes trips by special train to Gatun Dam, the Culebra cut, the locks and dam at San Miguel and Miraflores. Two days will be spent in Havana and three days at Kingston, Jamaica. Among those in the party are David Williams and Charles Kirchhoff.

* Master blacksmith, the J. A. Fay & Egan Company, Cincinnati, Ohio.

The Ohio Employers' Liability Law

The State Commission Gives a Hearing in Cincinnati

The Ohio Employers' Liability Commission held its first session in Cincinnati, October 13, 14 and 15. Representatives of a number of prominent manufacturing companies of the vicinity attended the hearing for the purpose of answering questions propounded by the commission relative to the Norris-Matthews law enacted April 7, some extracts from which are as follows:

Extracts from the Ohio Law

Sec. 6242. That in all actions brought to recover from an employer for personal injuries suffered by his employee or for death resulting to such employee from such personal injuries, while in the employ of such employer, arising from the negligence of such employer or any of such employer's officers, agents or employees, it shall be held in addition to the liability now existing by law that any person in the employ of such employer, in any way having power or authority in directing or controlling any other employee of such employer, is not the fellow servant, but superior to such other employee.

Sec. 6243. That if the employee of any such employer shall receive any personal injury by reason of any defect or unsafe condition in any ways, works, boats, wharves, plant, machinery, appliances or tools, except simple tools, in any way connected with or in any way used in the business of the employer, such employer shall be deemed to have had knowledge of such defect, before and at the time such injury was so sustained, and when the fact of such defect shall be made to appear upon trial of an action brought by such employee or his personal or legal representatives, against any such employer for damages, on account of such injuries so received, the same shall be prima facie evidence of neglect on the part of such employer; but the employer may show by way of defense that such defect was not discoverable in the exercise of ordinary care.

Sec. 6245. That in any such action when it shall appear that the injury or death was caused in whole or in part by any of the following, to wit: The neglect of such employer in failing to properly furnish, maintain, construct, guard, repair, inspect or protect any of the ways, works, boats, wharves, plant, machinery, appliances or tools, in any way connected with or in any way used in the business of the employer, in any manner required by statute or law of the State or United States; any defective or unsafe condition in the ways, works, boats, wharves, plant, machinery, appliances or tools, except simple tools, in any way connected with or in any way used in the business of the employer, the fact that such employee continued in said employment with knowledge of such negligent omission or want of care or such defective or unsafe condition shall not be a defense unless by the terms of his employment it was expressly made the duty of such employee to report such neglect or such defective or unsafe condition to the employer and the evidence discloses that such employee failed so to report, and that the employer was not otherwise possessed of knowledge of such negligent, unsafe or defective condition.

Sec. 6245-1. That in all such actions hereafter brought, the fact that the employee may have been guilty of contributory negligence shall not bar a recovery where his contributory negligence is slight and the negligence of the employer is gross in comparison. But the damages shall be diminished by the jury in proportion to the amount of negligence attributable to such employee. Provided that no such employee who may be injured or killed shall be held in any degree to have been guilty of contributory negligence in any case where the violation of such employer of any statute or law of the State or United States enacted for the safety of employees in any way contributed to the injury or death of such employee, unless by the terms of his employment it was expressly made the duty of such employee to report such violation to the employer, and the evidence shows that such employee failed so to report and that the employer was not possessed of knowledge of such violation. All questions of negligence, contributory negligence and assumption of risk shall be for the jury, under the instruction of the court.

Sec. 6245-3. That in all such actions any contract, rule, regulation or device whatsoever, the purpose or intent of which shall be to enable any employer to exempt himself or itself from any liability created by this act, shall to that extent be void; provided that in any action brought against any employer under or by virtue of any other provision of this act, such employer may set off therein any sum he or it has contributed or paid to any insurance, relief, benefit or indemnity that may have been paid to the injured employee or the person entitled thereto on account of the injury or death for which said action was brought.

Sec. 10,770. When the death of a person is caused by wrongful act, neglect or default such as would have entitled the party injured to maintain an action and recover damages in respect thereof, if death had not ensued, . . . the corporation which, or the person who would have been liable, if death had not ensued, or the administrator or executor of the estate of such person, as such administrator or executor shall be liable

to an action for damages, notwithstanding the death of the person injured, and although the death was caused under circumstances which make it in law murder in the first or second degree, or manslaughter.

Sec. 10,772 Such action shall be for the exclusive benefit of the wife, or husband, and children, or if there be neither of them, then of the parents and next of kin of the person whose death was so caused. It must be brought in the name of the personal representative of the deceased person; and where it shall appear that any such action is for the benefit of children, widow, widower, mother, father, brother or sister, the jury may give such damages, not exceeding in any case \$10,000, and where it shall appear that any such action is for the benefit of a widow and one or more minor children the jury may give such damages, not exceeding in any case \$12,000, as the jury may think proportioned to the pecuniary injury resulting from such death, to the persons respectively for whose benefit the action was brought.

The Questions Asked by the Commission

The questions asked by the commission were as follows:

1. What is your opinion as to the fairness of the law in this State with regard to liability of employers for accidents to their employees? What, if any, are your suggestions to the amendment of the law?
2. What is your opinion of the operation and adequacy of the labor law of this State in relation to the prevention of accidents, and what, if any, are your suggestions for its amendment in that regard?
3. Is the court and jury system for fixing the responsibility for industrial accidents now existing in the State satisfactory in its operation? If you answer no, state why.
4. Are you in favor of a system under which all accidents to employees shall be compensated for without regard to negligence, but under which the compensation paid shall be limited in amount? Please state reasons for your answer.
5. If you are in favor of such a plan, are you of opinion that the expense should be borne by the employer, employee and State?
6. What is your experience as to the value of relief associations of employees?

Extracts from the answers made by metal working Cincinnati employers to these questions are given below, the letters of the alphabet indicating the answers made by the same company or firm to the several questions:

Answers to Question 1

Employer A.—In my opinion the present law of the State of Ohio is unfair for the following reasons: If the aggregate loss caused by industrial accidents is to become a part of the cost of the product to be paid for by the consumer, any movement looking toward the permanent establishment of such a policy must recognize two essential elements: 1. Equalization of the burden. 2. Rendering indemnification certain. Under the present law an employer might suffer a heavy loss, which by reason of competition he would not be able to include in the price of commodities, but which he would be required himself to bear. The present Ohio law increases the cost of liability insurance to the employer and guarantees the employee nothing except the right to maintain an action. When we consider that 24 per cent. of the employers employ 10 men or less; 25 per cent. more than 10 or less than 20; 31 per cent. more than 20 or less than 50; 5 per cent. more than 50 or less than 100; 7 per cent. more than 100 or less than 200; 5 per cent. more than 200 or less than 300; that only 3 per cent. employ more than 300, it must be apparent that a very ordinary industrial accident would not only involve the manufacturer in endless litigation, but also that it might mean ruin to him and inadequate compensation to the workman.

The present law leaves open the possibility of diverting into improper channels the amount which is actually expended, and which should in justice go to the employee.

In many cases the employer might be held for sub-

stantial amounts aggregating \$12,000 in a single case, but in only a small percentage of the cases would the compensation be just or fair.

The present law encourages and fosters the contingent fee system, and in most cases a very large and unreasonable part of the amount awarded to the claimant would go to the attorney. It does not lessen the strenuous efforts put forth by indemnity companies to drive a hard bargain. Compensation should be proportioned to the actual financial loss to the injured and the unit upon which the right to recover is found should be the actual wage, the current earnings of the workman. This system means economy in administration, the liability is certain, the amount readily ascertained, while under the present law the liability of the employer in most cases is a difficult matter to determine.

Under the present law juries will give all sorts of verdicts, sometimes absurdly low, and other times, probably, unconscionably high. It goes beyond all reasonable requirements and awards damages to an employee who may have co-operated with his employer in the breach of duty.

Section 6245-3 provides that any contract between employer and employee exempting the employer from liability is void. The relation existing between employer and employee is not completely defined under the present law, while all prior laws and decisions pertaining to this very question are either repealed or inapplicable, and it does not limit the rules of liability to industrial occupations. It extends the doctrine of superior servants to employees of other branches where no such relation exists, irrespective of the duties to be performed.

Employer B.—We believe the present law to be unfair to the employer in that it creates an unknown liability, it throws the entire burden of responsibility for any accident on the employer and specifically prohibits him from entering into any agreement with the employee to limit or share such responsibility.

We believe a law should be passed fixing a limit of damages for each kind of injury in various classes of employment, creating a fund to be contributed to by the State, the employer and the employee from which fund the State should pay the damages fixed by the law.

Employer C.—Unfair. Adds a greater responsibility to employers than the laws of most of the States do: 1. In regard to assumption of risk. 3. In regard to the definition of vice principal. 3. The contributory negligence feature in which the burden of proof is placed on the employer and the award of damages depends upon the comparative negligence of employer and employee.

Employer D.—I believe that the present law of the State of Ohio, with regard to the liability for accidents to employees, is absolutely unfair. It practically puts a premium on carelessness, particularly contributory carelessness.

As the law is supposed to be based upon equity, it is unfair for the reason that it gives one party a decided advantage as against another party, whereas each party concerned in an accident should have an equal chance before the law.

Employer E.—It seems to me that the most equitable plan for both the employer and the employee is one in which the employer pays at the rate of 2 or 3 cents per day for every employee to the State, and the employee pays an equal amount. I understand that in Germany books are issued by the Government, ruled off the size of a postage stamp. The employer buys 5-cent labor stamps from the Government and a book is taken out for every employee. He places one 5-cent stamp in the book each day for the employee, which is deducted from his wages, and the other 5-cent stamp is put in by the firm. When an accident occurs there are no expensive lawsuits, there is no dickering as to who is to blame, there is no ill feeling between employer and employee, and in the end, although we would pay a little more, we would be the gainer.

Let us recommend to the commission a payment of 2 or 3 cents per day per employee. No firm could object to such a small payment, and it would create a fund sufficiently large to take care of any accidents that might happen. Let the State assume the responsibility and pay the employee for his injuries. Let the State set a price, as the insurance companies now do, for each injury, and a weekly indemnity during a period of illness.

Employer F.—The present laws of Ohio are unfair because they impose liability on the employer without regard to the nature of the hazards of the employment. The present laws of Ohio impose no incentive upon employees to perform their duty of exercising reasonable care, but allow an employee to recover even though the employee himself is guilty of negligence. In addition, the law makes all questions for the jury, with the result that, for the same kind of an accident with an equally serious injury, we have all kinds of verdicts, high and low, and an employer has no way of measuring the cost of industrial accidents in his cost account in determining what the goods may cost him.

The Employers' Liability law of Ohio should be amended by imposing liability on employers for negligence in the discharge of his primary duties of organizing his factory and furnishing and keeping in repair his machinery and prescribing reasonable rules and regulations. At the same time the employee himself should not be allowed to recover for his own negligence when the employer has used reasonable care. The Matthews law has unwisely extended the employers' liability without the same time putting some restrictions upon the measure of recovery and thereby imposed great hardships upon the employers, particularly upon the small employers.

Answers to Question 2

Employer C.—Sufficient in quantity. The conditions to be complied with are expensive and impose a burden on Ohio industries and handicaps it in competition to that extent.

Employer F.—In some respects the laws of Ohio are not adequate to cover the prevention of accidents in some kinds of hazardous employments, but the trouble is not with the law but in carrying out the law. The factory inspectors should be men of the highest grade of intelligence, who thoroughly understand the operation of dangerous machinery and who should go to employers in an absolute spirit of fairness and point out specifically to the employers wherein they could provide means of preventing accidents. Our suggestion for the amendment of the factory laws of Ohio is that the factory inspectors should not be appointed because of their political party, but should be selected after open competitive examination, and the examinations should be of such a high standard as to secure men of the highest intelligence and the highest integrity of character to discharge the duties in factory inspection. These factory inspectors also should have adequate compensation, because you cannot get good men to discharge these duties on the miserable salaries now provided for the payment of factory inspectors.

Answer to Question 3

Employer F.—The court and jury system for fixing responsibility for industrial accidents is not satisfactory in its operation. Courts are sometimes too technical, these technicalities resulting in injustice both to the employer and the employee. The jury system is not satisfactory, because juries are largely moved by passion and prejudice in reaching verdicts.

Answers to Question 4

Employer A.—I am in favor of a system under which all accidents to employees shall be compensated for under which the compensation shall be limited in amount and definitely fixed. I believe the question of

negligence should be entirely eliminated, and, further, that every employee should be held responsible for his willful acts. The actual remittances to the workmen would be greater, and the burden could, under wise laws, be more equitably distributed and the tendency toward prolonged litigation reduced to a minimum.

Employer B.—We are in favor of a plan by which fixed damages shall be paid by the State out of a fund, contributed to by the State, employer and employee without regard to negligence, but with assessments graded in accordance with the nature of the risk involved in the business and the character and efficiency of the safeguards installed by the employer.

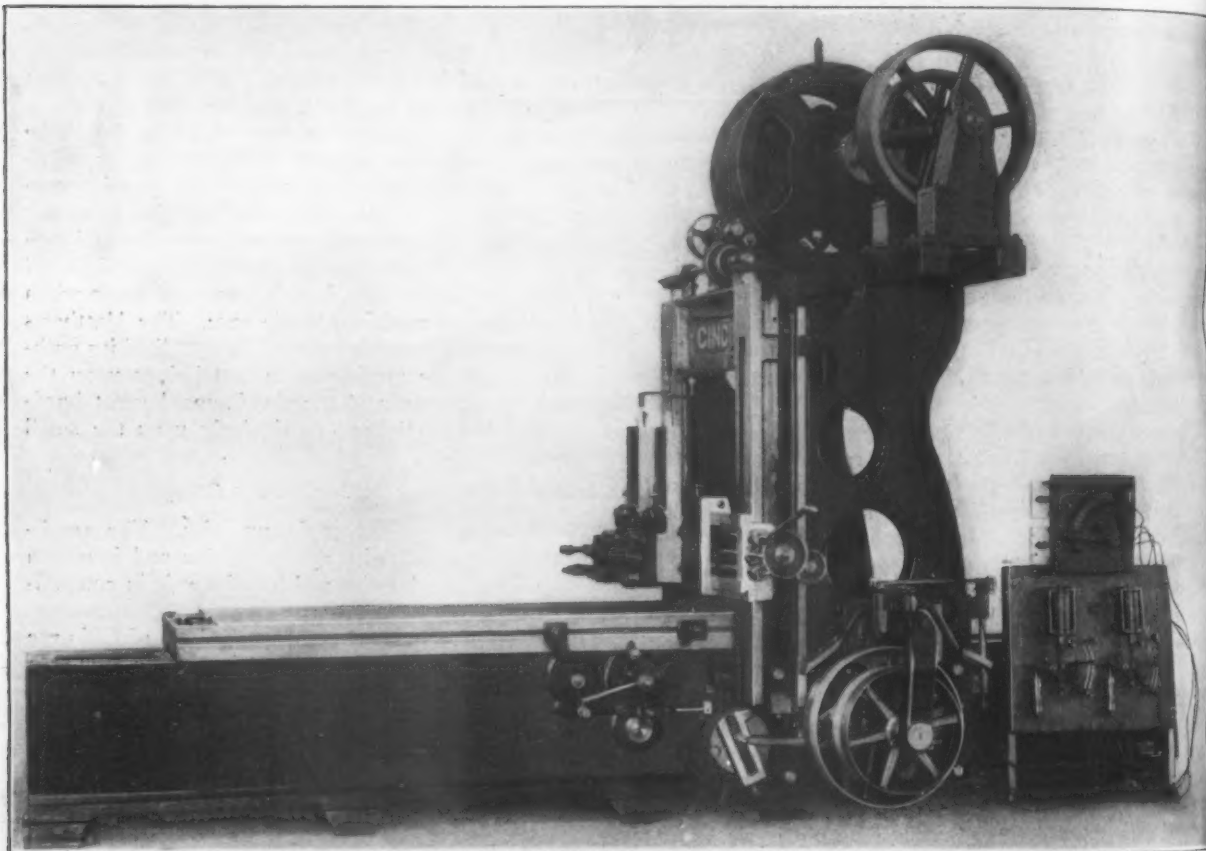
Employer C.—Yes, if the majority of States or of the States that do most of the manufacturing would pass a uniform law on the subject.

Employer D.—I would be in favor of an entirely

whose answers are above given are omitted for obvious reasons. These answers are extremely interesting, not only to Ohio manufacturers, but to others in various sections of the country.

Adjustable Speed Electric Drive for a Cincinnati Planer

A new adjustable speed electric drive has been fitted by the Cincinnati Planer Company, Cincinnati, Ohio, to its 36-in. forge planer. As will be noticed from the engravings this tool is of the same general type as the 56-in. model, which was illustrated in *The Iron Age* March 17, 1910, and others of its builder. The special features of this motor drive are that the speed of either the cutting or return strokes can be varied by the operator at will to suit conditions and



A New Type of Adjustable Speed Electric Drive Applied to a 36-In. Forge Planer Built by the Cincinnati Planer Company, Cincinnati, Ohio.

new law, which provided compensation to all employees injured to such an extent that they could not earn their usual wages, provided such injury was not caused by gross carelessness or by direct intent.

Employer F.—In our opinion the only solution of the problem of industrial accidents in hazardous employments is a fair workmen's compensation act in which recovery should be denied to an employee where he has recklessly brought on the injury on his own shoulders. The compensation for industrial accidents should be paid to the employees, except where the accident has been brought about as above indicated, and the compensation should be measured in part as to whether the accident was the result of negligence on the part of the employer, or whether it came about notwithstanding reasonable care on the part of the employer. These amounts should be so limited as not to throw upon the employer a large increase in his cost account, because to do so would put the Ohio employer at a disadvantage with the employers in other States where similar laws did not exist.

As to Question 5, the opinion was unanimous that employer, employee and the State should contribute. As to Question 6, all expressed a favorable opinion.

The names of the manufacturing establishments

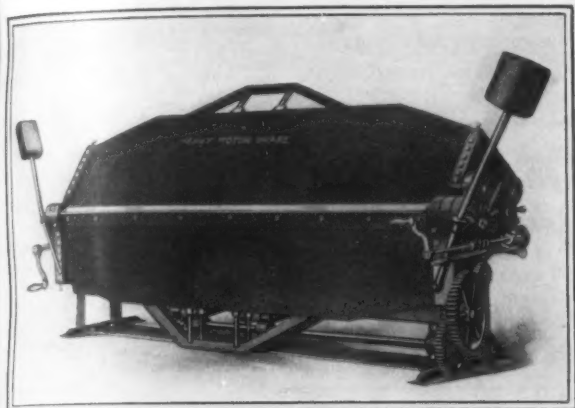
the motor can be coupled direct to the countershaft, thus eliminating all gearing.

The motor used is mounted on top of the planer, as in an ordinary motor drive, and has a speed variation of 2 to 1, regulated by the controlling apparatus, which is mounted on the switchboard at the rear of the housings, the starting box being mounted at the top. In the lower portion of the board are two controllers mounted side by side. One of these is for the cutting stroke and enables any speed between 25 and 50 ft. to be obtained without in any way altering that of the return. The other is for the return speed, which can be varied between 50 and 100 ft. without affecting the speed of the cutting stroke. Thus it is possible to operate at a cutting speed of 40 ft. and a return of 60 ft., or a cutting speed of 20 ft. with a return of 90 ft.

A limit switch in front of the housings operates these controlling levers, so that once they have been set for any particular speed an automatic return to that speed at each stroke is secured. The wiring shown in the illustration is only temporary. As regularly installed, no more wiring is required than with a standard motor drive, except that running to the limit switch.

The Dreis & Krump Motor Driven Brake

A motor driven brake of steel plate construction for bending heavy material has been recently designed by the Dreis & Krump Mfg. Company, 2911 South Halsted street, Chicago, Ill. The brake is intended for handling plates up to $\frac{3}{8}$ in. thick and is 16 ft. 2 in. long. Machines of this type are adapted for cornice work, making skylights, automobile parts, steel range work, tank and boiler work and mine cars. In doing this last class of work which requires a number of parts having exactly the same radius, a former may be attached to



A Motor Driven Brake for Bending Heavy Plates and Sheets Made by the Dreis & Krump Mfg. Company, Chicago, Ill.

the upper jaw to produce a number of pieces of uniform size and shape.

In operation the upper or clamping jaw is moved by worm gears having eccentric acting hubs in the lower end of the steel connecting links on the end of the machine. These links are rotated by worms operated either by a crank at the front of the machine or through gearing in the rear by power. The apron or bending leaf is operated by two steel cut gear racks working on pinions driven through a series of gears and friction clutches by an electric motor which in the engraving is hidden behind the lower jaw.

The sheet or plate to be bent is clamped between the upper and lower jaws by turning the crank in the front of the brake or by throwing in the clutch which operates the worm gear. This friction clutch brings the gear into action, and the apron is raised and the material bent over the edge of the upper jaw. For making bends of exactly the same angle, an adjustable collar secured to the rack is furnished. When this collar is used the driving clutch is automatically disengaged when the proper angle has been reached and the reverse clutch brought into action which lowers the bending leaf rapidly. A specially convenient feature of the brake is that the entire space between the upper and lower jaws from end to end is open without obstruction so that any width of sheet can be inserted.

The machine is made of heavy steel plate where strength is required, and the housing and connecting parts are of cast steel. The brakes are made in a number of sizes and are designed for operation by electric motor, compressed air or steam power or by hand if no other source of power is available.

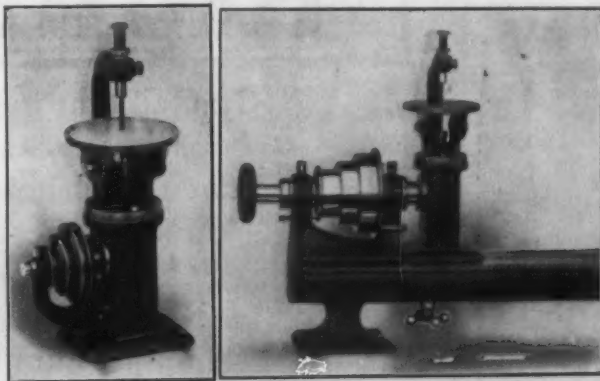
The Western Steel & Iron Company.—A new incorporation, known as the Western Steel & Iron Company, will shortly begin work at Pittsburg, Kan., on the foundations for a rolling mill, which it is proposed to remove from Louisville, Ky. Walter Baird, one of the leading promoters of the enterprise, states to a local paper that it is expected to have the mill in operation by May 1, 1911. The company will be incorporated under the laws of Kansas and capitalized at \$500,-

000. The Commercial Club of Pittsburg has contracted to furnish 40 acres of land as a site for the new plant. The main building is to be of steel and concrete, 110 x 300 ft., with a wing, 60 x 200 ft. Other buildings will include a power house, scrap sheds, &c. The plant comprises a 12-in. roughing mill, and 8-in. finishing mill, two hot sheet mills and one cold sheet mill. When operated at Louisville by the Louisville Bolt & Iron Company, the plant made a specialty of nuts and bolts, but the new owners expect to manufacture sheet iron, bar iron, rods, reinforcing concrete bars, and mine rails rerolled from old steel rails. The nearest rolling mill to Pittsburg, Kan., is at Kansas City, Mo.

The Waltham Filing Machine

A convenient machine for die work, especially in the making of small sub press dies for watch, clock and similar work, has been placed on the market by the Waltham Machine Works, Newton and Cutter streets, Waltham, Mass. Fig. 1 is a view of the machine itself arranged for driving from a countershaft with a three-step cone pulley, while Fig. 2 shows it driven by a special chuck in a bench lathe headstock.

The table has two supports and two clamping screws which make it very rigid, and can be tilted to file the clearance angle. While in this tilted position it can be swiveled in the horizontal plane for a complete revolution. In this machine the files can be held by either one of two methods. In the first, the ends of the file are clamped in a vise at the lower end which has a vertical V groove and by a split chuck with four wide slots at the top, thus enabling either flat or round shank files to be securely gripped. In the other scheme, cross holes are drilled in the ends of the files and looped over pins in the frame. This arrangement is desirable for very thin files or diamond charged strips, and by turning the nut at the top of the frame considerable tension can be given. If desired, the upper spindle can be removed from the frame with the file attached which



[Fig. 1.—The Machine. Fig. 2.—The Machine Attached to a Lathe Head.

A New Filing Machine Made by the Waltham Machine Works, Waltham, Mass.

makes it an easy matter to remove the file from the die by simply releasing the lower end. Files ranging in length from 2 to $3\frac{1}{2}$ in. can be held in the machine, and an assorted set is furnished with it. The stroke of the frame is adjustable, the maximum length being $1\frac{1}{2}$ in.

The table is 5 in. in diameter, and its height from the bench is $9\frac{3}{4}$ in. The complete weight of the machine is 21 lb.

The Nippon Yusen Kaisha, the leading Japanese steamship company, has ordered six new vessels for its Pacific service from Seattle to Nagasaki. They will be of 6000 tons, able to maintain 12 knots speed and will be constructed in Japan.

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought are given elsewhere in our weekly market report.

IRON AND STEEL— Bar Iron from store—

Refrined Iron:

1 to 1 1/4 in. round and square.....	per lb 1.90¢
1 1/2 to 4 in. x 1/2 to 1 in.....	per lb 2.10¢
1 1/2 to 4 in. x 1/2 to 1 in.....	per lb 2.10¢

Rods—3/8 and 11-16 round and square.....

Angles:	Cts per lb
---------	------------

3 in. x 1/4 in. and larger.....	2.10¢
3 in. x 3/16 in. and 1/2 in.....	2.35¢
1 1/2 to 2 1/2 in. x 1/2 in.....	2.20¢
1 1/2 to 2 1/2 in. x 3/16 in. and thicker.....	2.10¢
1 to 1 1/4 in. x 3/16 in.....	2.30¢
1 to 1 1/4 in. x 1/2 in.....	2.40¢
1 1/2 to 2 1/2 in. x 1/2 in.....	2.50¢
1 1/2 to 2 1/2 in. x 3/16 in.....	3.55¢
1 1/2 to 2 1/2 in. x 1/2 in.....	4.35¢

Tees:

1 in.....	2.65¢
1 1/4 in.....	2.45¢
1 1/2 to 2 1/2 in.....	2.15¢
1 1/2 to 2 1/2 in. x 3/16 in.....	2.35¢
3 in. and larger.....	2.15¢

Beams.....

Channels, 3 in. and larger.....	2.10¢
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Hand—1 1/2 to 6 x 3-16 to No. 8.....

"Barden's Best" Iron, base price.....	3.15¢
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Burden's "H. B. & S." Iron, base price.....

Norway Bars.....	3.60¢
------------------	-------

Merchant Steel from Store—

Bessemer Machinery.....	per lb 1.90¢
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Toe Calk, Tire and Sleigh Shoe.....

Best Cast Steel, base price in small lots.....	2.50¢ @ 3.00¢
--	---------------

Sheets from Store—

Black

	One Pass, C. R.	R. G.
--	-----------------	-------

No. 16.....	per lb 2.55¢	Cleaned. 2.80¢
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Nos. 18 to 20.....	per lb 2.70¢	2.90¢
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No. 22 and 24.....	per lb 2.75¢	3.00¢
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No. 26.....	per lb 2.80¢	3.10¢
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No. 28.....	per lb 2.95¢	3.30¢
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Russia, Planished, &c.

Genuine Russia, according to assort-ment.....	per lb 12 @ 14¢
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Patent Planished, W. Dewees Wood.....

	per lb A, 10¢; B, 9¢ net.
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Galvanized.

Nos. 12 and 14.....	per lb 2.95¢
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Nos. 22 to 24.....	per lb 3.30¢
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No. 26.....	per lb 3.50¢
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No. 28.....	per lb 3.80¢
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No. 20 and lighter 3/8 inches wide, 25¢ higher.

Genuine Iron Sheets— Galvanized.

Nos. 22 and 24.....	per lb 5.75¢
No. 26.....	per lb 6.25¢
No. 28.....	per lb 7.25¢

Corrugated Roofing—

	Painted	Galvd
2 1/2 in. corrugated.....		
No. 24.....	per 100 sq. ft. \$3.35	4.40
No. 26.....	per 100 sq. ft. 2.95	4.00
No. 28.....	per 100 sq. ft. 2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal.....	\$6.35
------------------------	--------

IC, 14 x 20.....	\$5.40
------------------	--------

IX, 14 x 20.....	\$4.40
------------------	--------

A. Charcoal.....	\$5.40
------------------	--------

IC, 14 x 20.....	\$5.40
------------------	--------

IX, 14 x 20.....	\$4.40
------------------	--------

IX, 14 x 20.....	\$5.40
------------------	--------

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating.....	\$8.50
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IX, 20 x 28 with an 8 lb. coating.....	10.50
--	-------

Seamless Brass Tubes—

List November 15, 1908.....	Base price 18¢
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Brass Tubes, Iron Pipe Sizes—

List November 13, 1908.....	Base price 18¢
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Copper Tubes—

List November 13, 1908.....	Base price 21¢
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Brazed Brass Tubes—

List August 1, 1908.....	19¢ per lb
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High Brass Rods—

List August 1, 1908.....	14¢ per lb
--------------------------	------------

Roll and Sheet Brass—

List August 1, 1908.....	14¢ per lb
--------------------------	------------

Brass Wire—

List August 1, 1908.....	14¢ per lb
--------------------------	------------

Copper Wire—

Base Price.....	Carlond lots mill 14¢
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Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots).....	per lb 18¢
---	------------

Sheet Copper Cold Rolled, 1¢ per lb advance over Hot Rolled.....	
--	--

Sheet Copper Polished 20 in. wide and under, 1¢ per square foot.....	
--	--

Sheet Copper Polished over 20 in. wide, 2¢ per square foot.....	
---	--

Planished Copper, 1¢ per square foot more than Polished.....	
--	--

METALS— Tin—

Straits Fig.....	per lb 35¢
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Copper—

Lake Ingot.....	per lb 14¢
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Electrolytic.....	per lb 14¢
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Casting.....	per lb 14¢
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Spelter—

Western.....	per lb 9¢
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Zinc.

No 9, base, casks.....	per lb 8¢ Open.....
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Lead.

American Fig.....	per lb 5¢
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Bar.....	per lb 5¢
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Solder.

1/2 & 1/2 guaranteed.....	per lb 25¢
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No. 1.....	per lb 20¢
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Refined.....	per lb 15¢
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Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson.....	per lb 10¢
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Hanetta.....	per lb 10¢
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Other Brands.....	per lb 10¢
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Bismuth—

Per. lb.....	\$2.00 @ 2.50
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Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in bars for remelting.....	per lb 20¢
---	------------

Rods & Wire.....	Base Price
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Sheets.....	Base Price
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Old Metals.

Dealers' Purchasing Prices Paid in New York

Copper, Heavy cut and crucible.....	per lb 16.75¢
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Copper, Heavy and Wire.....	per lb 16.75¢
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Copper, Light and Bottoms.....	per lb 16.75¢
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Brass, Heavy.....	per lb 7.25¢
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Brass, Light.....	per lb 6.75¢
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Heavy Machine Composition.....	per lb 6.50¢
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Clean Brass Turnings.....	per lb 7.00¢
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Composition Turnings.....	per lb 6.25¢
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Lead, Heavy.....	per lb 6.10¢
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Lead, Tea.....	per lb 6.10¢
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Zinc Scrap.....	per lb 6.10¢
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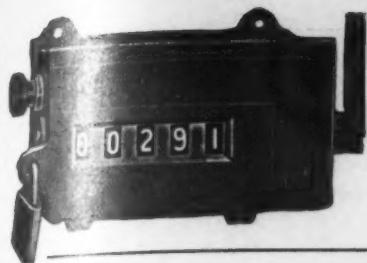
NICHOLSON

Granted that just ONE mechanic in your shop can save from ten to twenty minutes time per day through the use of NICHOLSON FILES—how great will be the saving when from fifty to one hundred or more men "get busy" with the fast cutting

NICHOLSON?



Nicholson File Company
Providence, R. I.



Counting Machines

The Recording Register &
Fare Box Co.
New Haven, Conn.

YOU CAN COUNT ON DURANT COUNTERS

for accuracy wherever a correct count is wanted. Any of twelve styles sent on 30 days' Free Trial. Special Counters built to order. Catalog 12?

The W. N. Durant Co.
MILWAUKEE, WIS.
London Agent,
Theodore Butler, Ltd.



HIGHEST QUALITY FILE ON THE MARKET. WE USE NOTHING BUT CRUCIBLE STEEL
DEEPEST CUT TEETH. ADVANCED METHODS OF TEMPERING.

WILL CUT FASTER AND LAST LONGER THAN ANY OTHER FILE ON THE MARKET

LIVERIGHT BROTHERS

NOT IN THE TRUST

PHILADELPHIA, PA.

FILES THAT FILE

GOLD ★ MEDAL

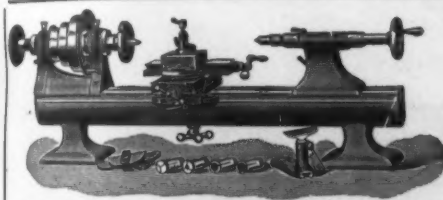
WITH OUTLASTING QUALITY



Count Your Product Automatically

on our counters, and save handling and expense. When your job is finished it is counted. Ask for Catalog 15.

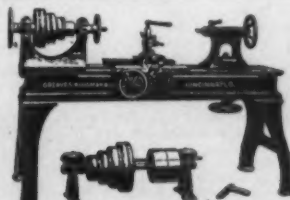
THE C. J. ROOT COMPANY, - - Bristol, Conn.



PRECISION BENCH LATHE

Accurate, convenient, durable. Swings 8 in. and will take 1/2 in. diam. through chuck. Bed 32 or 36 in. long. Write for prices.

WALTHAM MACHINE WORKS : : Waltham, Mass.

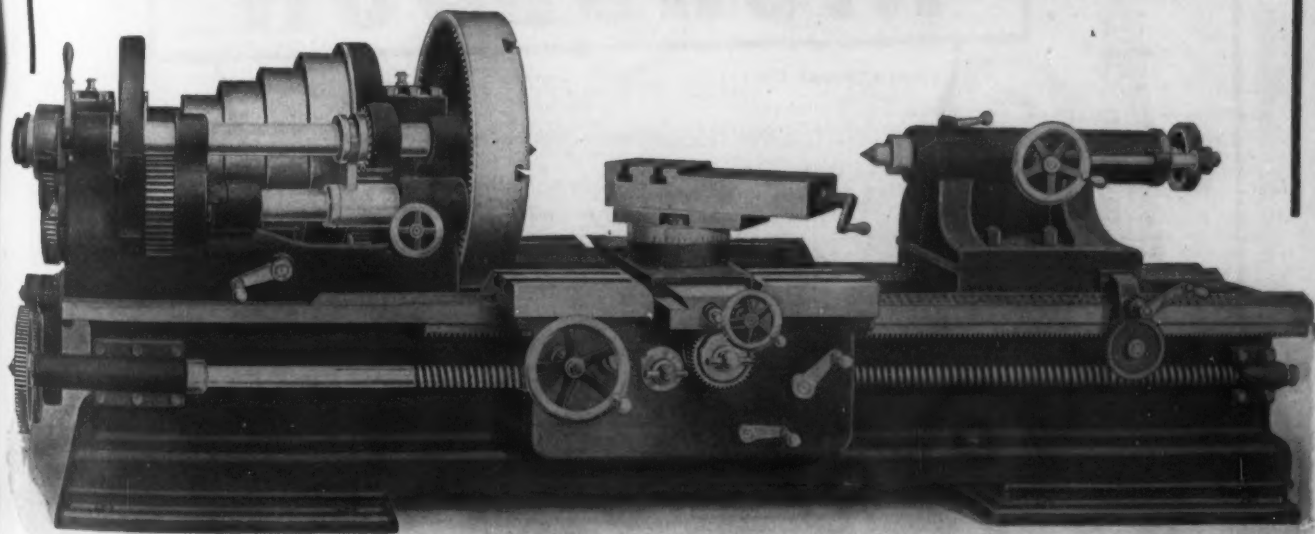


Pattern Makers' Lathes, 12 to 30" Swing, with or without bed.

BEDS ANY DESIRED LENGTH
Cut shows 20 in. x 6 ft. lathe, with movable carriage of superior design.

GREAVES, KLUSMAN & CO., Cincinnati, Ohio, U.S.A.

ACCURATE MACHINE TOOLS



Davis 42-inch Triple Geared Engine Lathe

(GEARS CASED)

Orders can be sent to us direct or through leading machinery dealers in all large cities of the world

THE W. P. DAVIS MACHINE CO.

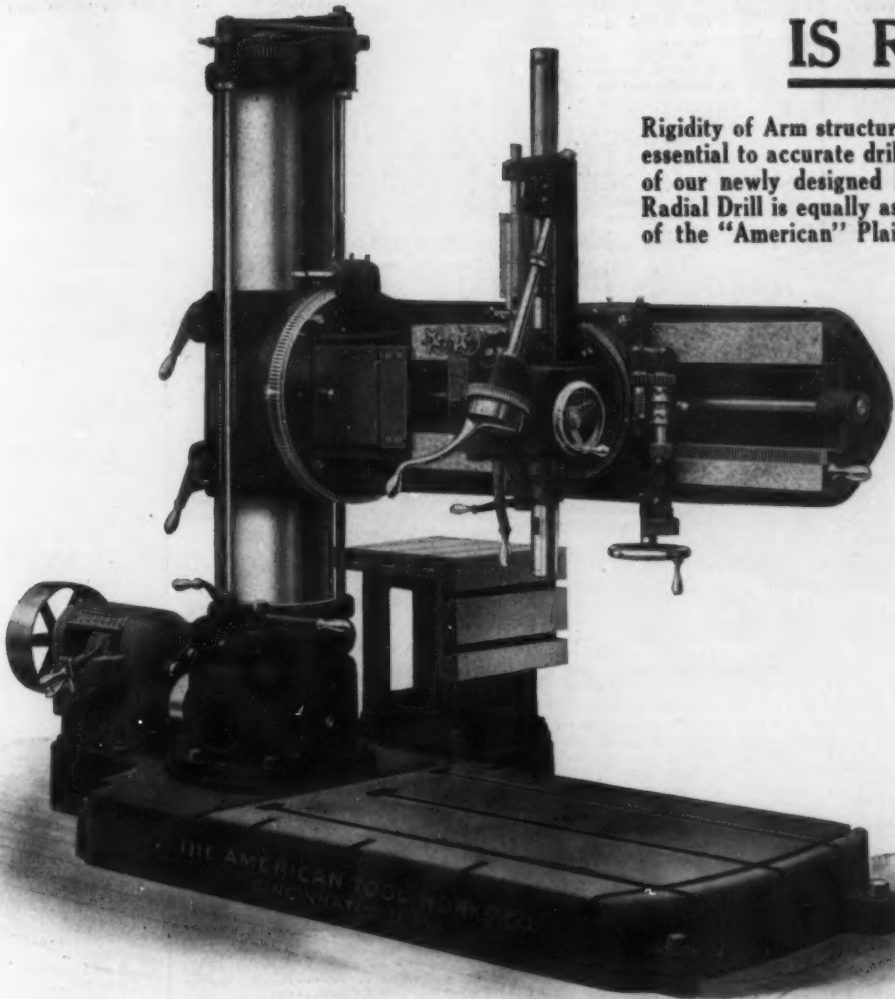
ROCHESTER, N. Y., U. S. A.

THE ARM

OF

"American" Full Universal Radial Drill**IS RIGID**

Rigidity of Arm structure is absolutely essential to accurate drilling. The arm of our newly designed Full Universal Radial Drill is equally as rigid as that of the "American" Plain Radial.



4-5-6-7 FT. ARMS

ALL STEEL GEAR DRIVEN—BRONZE BUSHED THROUGHOUT

The arm is made in the form of upper and lower tube sections bound together by a **DOUBLE WALL** of metal reinforced by heavy transverse ribbing.

The Saddle is unusually wide and rigid and can be firmly locked at any point along the arm by means of a powerful clamping device which binds together the double arm sections and saddle into a very compact unit.

This forms the best construction possible for resisting all torsional and bending strains.

The Tapping Attachment is located near the arm girdle and not in the saddle, as in other designs of Universal Radials.

It is operated by a lever conveniently placed on the head.

This is a decided advantage, for it permits the use of More Liberal Proportions in the TAPPING ATTACHMENT and also in the Saddle Mechanism.

THE TAPPING ATTACHMENT FRICTIONS are of our "Patented" **DOUBLE BAND** Type, consisting of an outer contracting and an inner expanding friction, and will transmit more power than any other friction of similar dimensions.

THE HEAD is Triple Geared and affords 1 direct, and 2 reduced speeds. It can be swivelled through a complete circle by means of a hand wheel and worm which engages a worm wheel fixed to the head. This feature is of special value in setting the spindle for angular drilling. The worm holds the swivelling head in any position and eliminates all possibility of accident, through the head swinging around of its own weight when the clamping bolts are loosened.

The many other excellent features of these machines are fully described by Circular No. 365, which we shall be glad to send you.

The drilling of holes is every bit as important as any other work done in a machine shop and should be given just as much attention.

To accomplish the best results the very best of tools must be used.

Remember, your shop is the very foundation of your business, therefore leave no stone unturned to perfect it in every way possible.

The American Tool Works Company

200 to 250 Culvert St., CINCINNATI, U. S. A.

LATHES

PLANERS

SHAPERS

RADIALS

Cincinnati Machines Produce Maximum Work With Least Human Effort.

High-powered machines that drive high speed steel twist drills to their utmost capacity.

Cincinnati High Speed Drilling and Tapping Machines are extremely heavy and powerful in construction, shaft driven, with sliding heads, friction back gears and patent positive geared feed.

BICKFORD RADIAL DRILLS

permit the operator to rapidly finish jobs that could not be handled on the ordinary Drill.

Are of improved design with more power, greater stiffness and a wider range of speed.

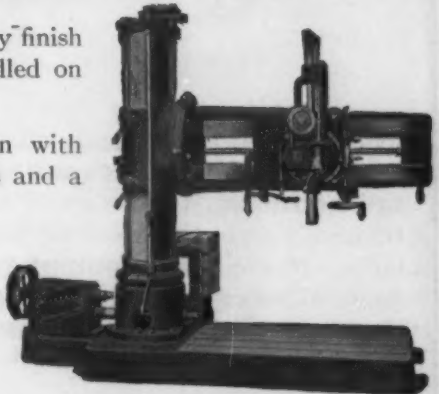
THE CINCINNATI HIGH SPEED UPRIGHT DRILL.

Machines that fail to profitably perform the service your work requires, are too expensive for you—no matter how low the cost.

Don't forget that when you consider any other but a Bickford.

Why not read the Catalog now?

THE CINCINNATI BICKFORD TOOL CO.,
CINCINNATI, OHIO, U. S. A.



THE BICKFORD FULL UNIVERSAL RADIAL DRILL.

Is your shop just trudging along?

Speed things up a bit. Put in equipment that will help you turn out your orders promptly—on time—at a low cost.

New Haven 36-inch Motor Driven Lathe (Triple Geared) is such a machine.

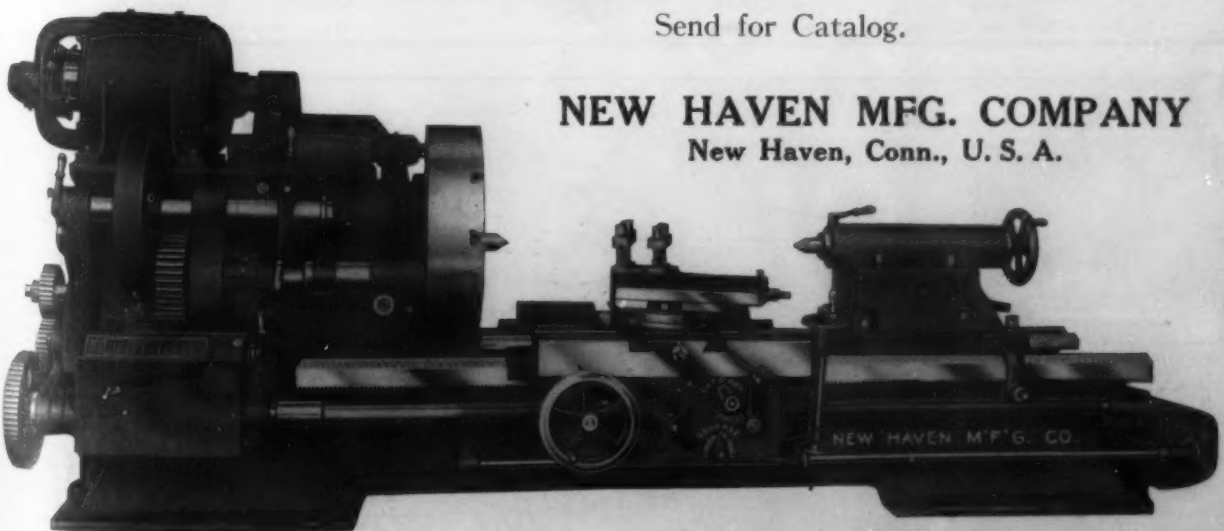
It's motor driven by G. E. Co. 10-H. P. Motor. Motor speed, 450 to 1,350 R.P.M. Lathe Spindle Speeds, 450 to 1 (total ratio); swing over bed, 37 in., 14 feet; between centers, 6 feet.

A manufacturing machine giving every advantage for economical production—for strength, rigidity, accuracy and capacity.

We can furnish any of our lathes Motor Driven, with Variable Speed Motor.

Send for Catalog.

NEW HAVEN MFG. COMPANY
New Haven, Conn., U. S. A.



With Gridley Automatic Turret Lathes



Automatic Turret Lathe—Single Spindle

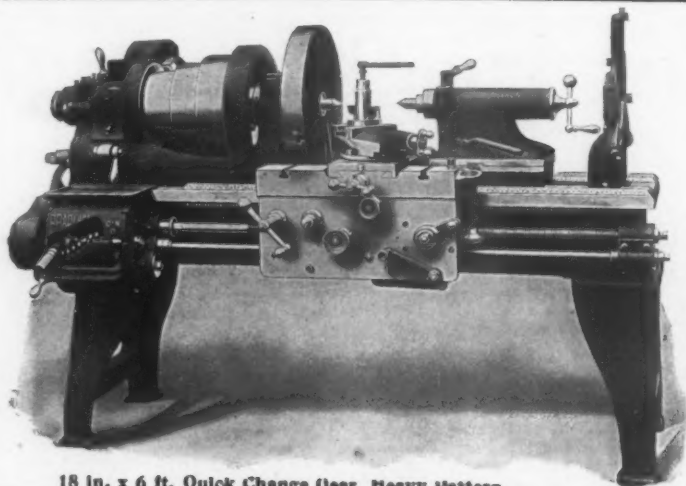
There Is No Overhang To The Tools

This "No Overhang" feature gives Gridley operators a decided advantage, as it permits a better design of turning tools to be used and also permits drills to be more rigidly supported and held closer to the work. A more accurate product is always the result. But this exclusive feature accomplishes more than that, it allows ample room to attach one tool back of another; that is why Gridley operators frequently do at one operation the same work that requires two or more operations on any other turret lathe. Not only is the output greater, because heavier feeds and coarser cuts can be taken, but a much wider range of work can be handled, simply because there is sufficient room to attach "Special Tools"—tools that cannot be used on other automatic turret lathes. Gridley Automatics will handle work twice the length that other machines can. Made in both Single and Multiple Spindle. Send for Catalogue.

Windsor Machine Company,

Windsor, Vt., U. S. A.

Manning, Maxwell & Moore, Inc., Sales Agents, New York, Philadelphia, Pittsburg, Cleveland, Chicago, and St. Louis. Craven Bros., Ltd., Manchester, Great Britain, and Colonies and South America. M. Koyemann, Charlottenstrasse, 112 Dusseldorf, Germany, Holland, Belgium, Switzerland and Austria-Hungary.



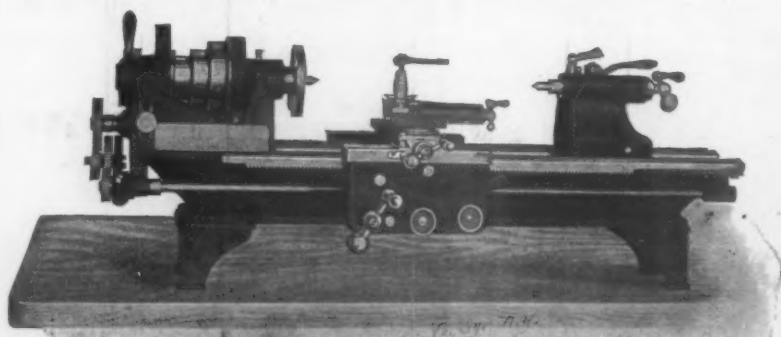
18 in. x 6 ft. Quick Change Gear, Heavy Pattern

Bradford Quick Change Gear Lathes

Strength and Rigidity in every line. Range of threads and feeds unlimited. Screw cutting and feeds without the removal of a gear. One lever for all threads. All parts of easy access. Screw not in motion except for screw cutting. Friction cross feed, graduated to read in thousandths of an inch, friction traverse in the apron and automatic stop for carriage, are further good points. Lathes from 14 to 42 inch swing

The Bradford Machine Tool Co.

CINCINNATI, O., U. S. A.



9 in. "Star" Bench Lathe

For tool, model and scientific instrument makers, laboratory and experimental work; in short, for profitable use in all lines of fine, accurate manufacturing and precision service.

A very complete lathe, has a large line of conventional attachments and covers a wide range of work. Send for Catalog B.

The Seneca Falls Mfg. Co.

255 Water St., Seneca Falls, N. Y.

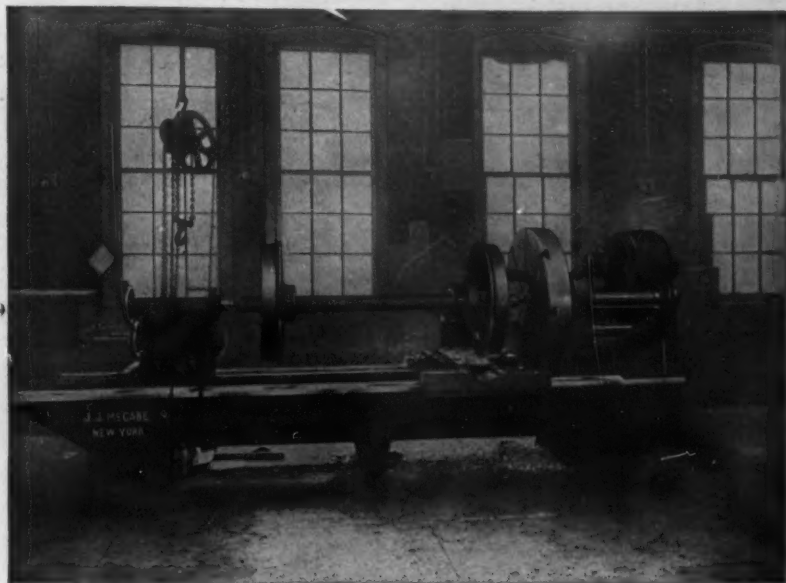
They do it in R. R. Repair Shops

Turn their Driving-wheels and do the heaviest classes of work on the 48-inch Triple-gear Swing of McCabe's "New Style" 2-in-1 DOUBLE-SPINDLE LATHE.

And then do all the small work on the 26-inch Swing, when there's nothing big to do.

In the big shops—in the small shops—in the wide-awake shops, where they appreciate the economy of buying a Lathe for a thousand dollars less in price than a regular big Lathe—in these shops McCabe's "2-in-1" Lathe is always found.

Have you "found" it yet? You will sooner or later. Get the book now.



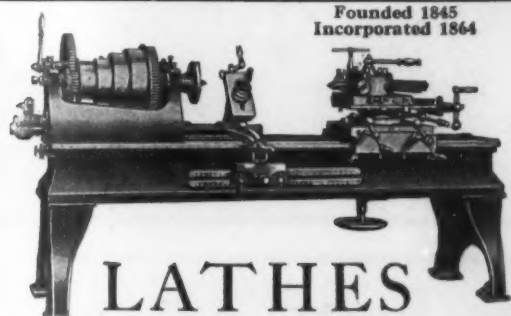
TURNING DRIVING-WHEELS ON McCABE'S "NEW STYLE" 2-IN-1 DOUBLE-SPINDLE LATHE, 26-48-INCH SWING

30 CHURCH STREET

J. J. McCABE
"THE DOUBLE-SPINDLE LATHE MAN"

NEW YORK CITY

Founded 1845
Incorporated 1864



LATHES

For Heavy Brass and Iron Work

Our No. 0 Turret Lathe is a serviceable tool and a good producer. Has many special features.

Send For Latest Catalog

American Tool & Machine Co., Boston, Mass.



Milwaukee Machine Tool Company, ENGINE LATHE
Railway Exchange Building Milwaukee, U. S. A.



High Speed Lathes

ENGINE LATHES
Quick-Change or Belt Feed

CHUCKING LATHES ROUGHING LATHES
TURRET LATHES

THE
R. K. LE BLOND
MACHINE TOOL
COMPANY

4609 Eastern Ave.
Cincinnati, O.,
U. S. A.



All standard threads cut without removing a gear, stopping the lathe, or reversing the lead screw

LATHES and PLANERS

SEND FOR CATALOGUE

WHITCOMB-BLAISDELL MACHINE TOOL CO.
WORCESTER, MASS.

USERS EVERYWHERE SAY:

Qualities most desired are found highly developed in Cincinnati Lathes and at reasonable prices without sacrificing worth. Want proof? Supply two kinds of Geared Feed Boxes, 3 step or 5 step Cone. Why not select a machine best adapted for your particular work?

THE CINCINNATI LATHE & TOOL CO.
Spring Grove Ave. & Marshall St., CINCINNATI, OHIO, U. S. A.

STRUCTURAL DRAWING

By C. F. EDMISTER

A new and thoroughly comprehensive treatise. 153 pages; 75 full-plates; cloth. This is by far the best book on the subject. Send for circular. Price \$2.50. For sale by

DAVID WILLIAMS COMPANY

14-16 PARK PLACE

NEW YORK



LE COUNT'S "Double Tail" LATHE DOG

Send for Catalog "B" showing our full line of Machine Tools.

Manufactured by
Wm. G. Le Count,
East Norwalk, Conn.

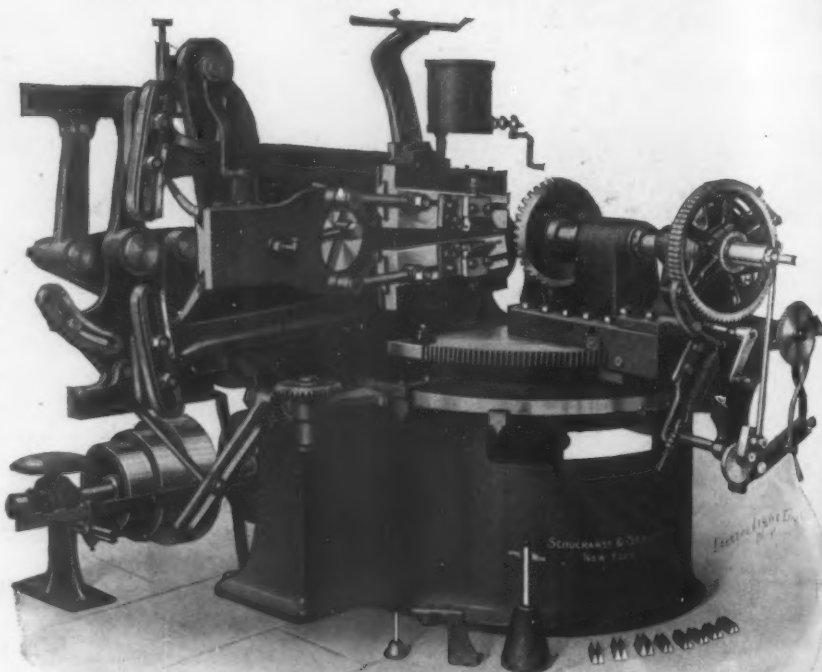
The New Improved Automatic BEVEL GEAR PLANNER

(System Robey-Smith)

Evolving its own
tooth without the use
of formers.

Besides being the sim-
plest in construction, it
is the most rapid work-
ing machine of this class.

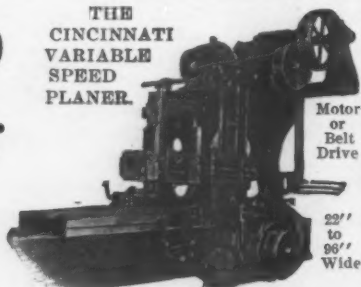
Made in 5 sizes, 12",
16", 24", 32", 48".



SCHUCHARDT & SCHÜTTE, WEST STREET BUILDING, N. Y.

**15 to 50
Feet Per
Minute**

THE
CINCINNATI
VARIABLE
SPEED
PLANNER.



That's the speed variation furnished by Cincinnati Variable Speed Planers—and this means anywhere from 25 to 50% saving over the ordinary one-speed machines. If you want the proper speed for roughing and finishing—for cast iron, steel and brass—get a "Cincinnati."

Ask for the Catalog Today

The Cincinnati Planer Company
CINCINNATI, OHIO, U. S. A.

MORTON MANUFACTURING CO.

Draw Cut Shapers, Special Draw Cut R. R. Shapers,
Special Locomotive Cylinder Planers, Portable Planers,
Stationary and Portable Key Way Cutters,
Finished Machine Keys

Office and Works, MUSKEGON HEIGHTS, MICH., U. S. A.

PLANERS

Send for Catalogue and Prices.

Woodward & Powell Planer Co.
WORCESTER, MASS.

Dixon's Flake Graphite

Powdered Form

Perhaps many purchasers of graphite do not know that the celebrated Dixon Flake Graphite can be secured in finely ground form as well as in the large flake. There are three grades of Dixon's Graphite (referring to fineness of grinding).

No. 1 is a large flake for use in heavy work.

No. 2 is a smaller flake for close-fitting parts.

No. 635 is a very finely ground flake—practically a powder. It is widely used for the lubrication of stationary gas engine cylinders.

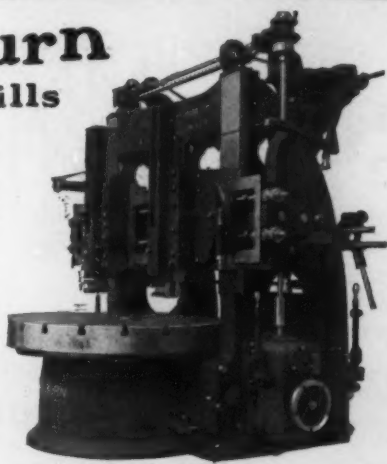
Write our Lubricating Department for further information.

Joseph Dixon Crucible Company
Jersey City, N. J.

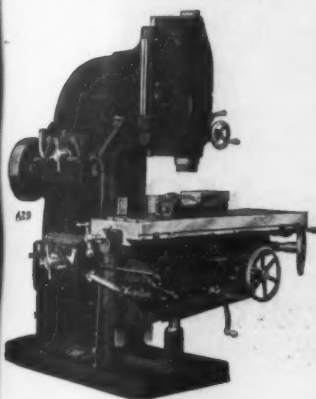
Colburn Boring Mills

What you want in a boring mill is not only ample power and rigidity, but also features that enable the operator to handle his machine quickly and easily. These are all embodied in Colburn New model mills—and you can absolutely rely on their accuracy. Sizes, 30", 34", 42", 48", 54", 60", 72". Send for our handsome new catalog, full of interesting boring mill information.

Colburn Machine Tool Company
Franklin, Pa., U.S.A.



Cincinnati Millers



All commercial sizes, plain, universal and vertical, High Power Single Pulley Type and Cone Type. Also Universal Cutter Grinders.

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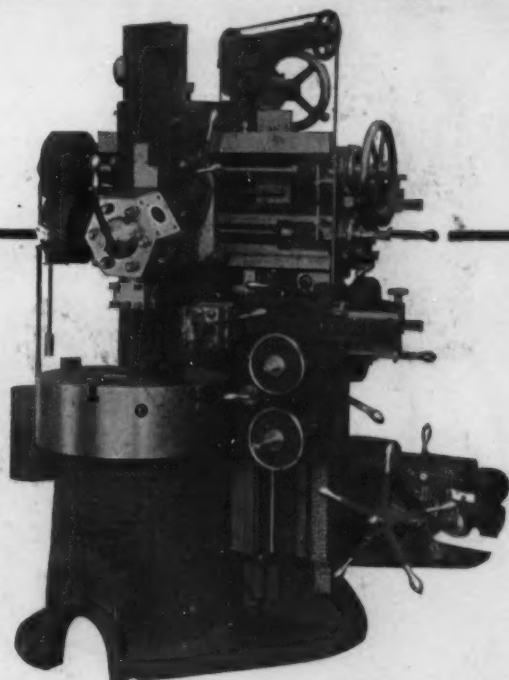
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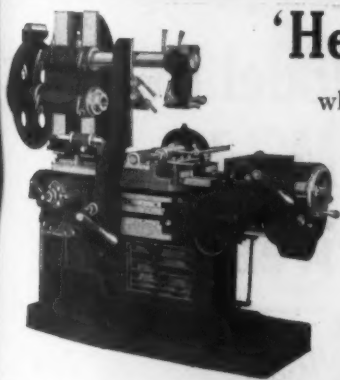
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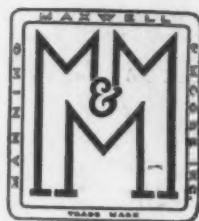
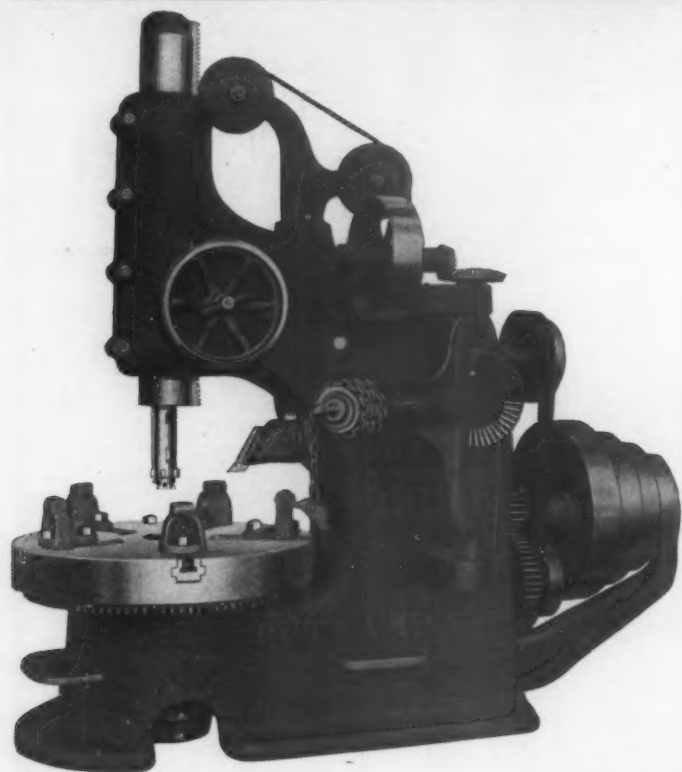
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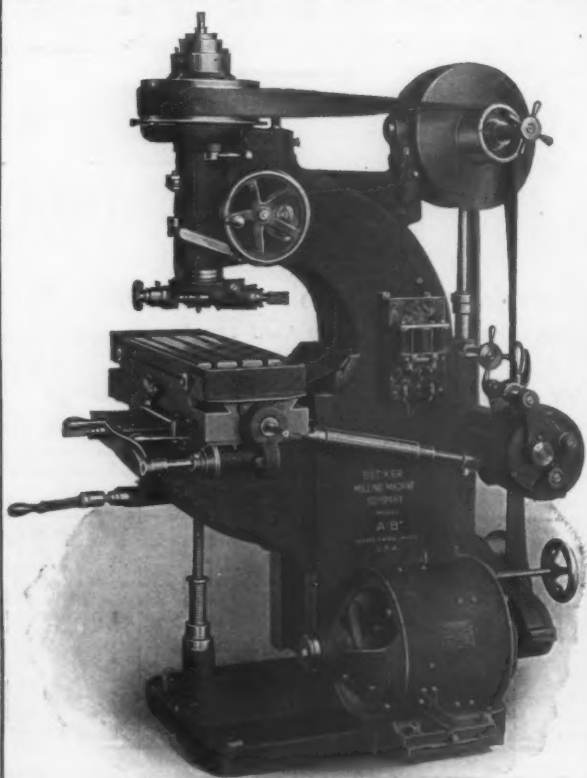
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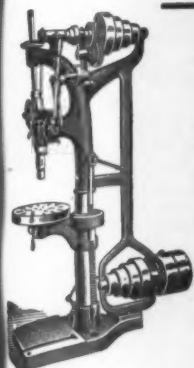
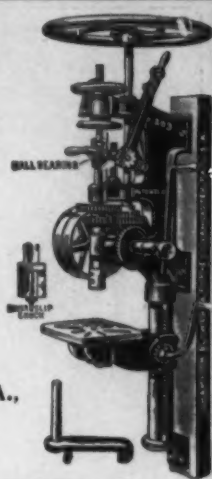
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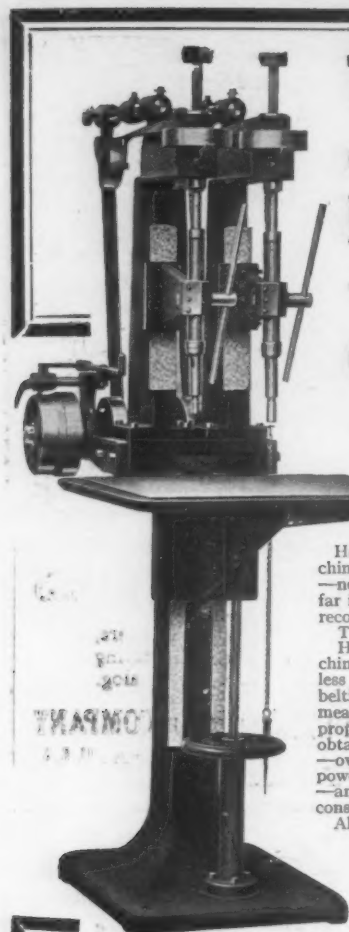
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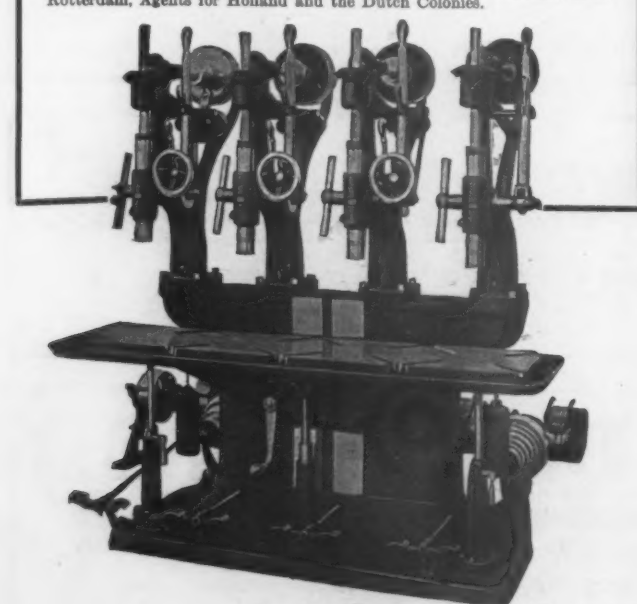
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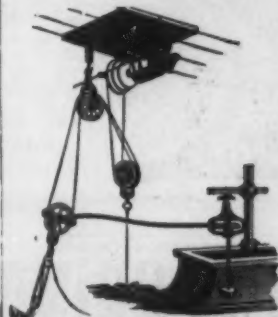
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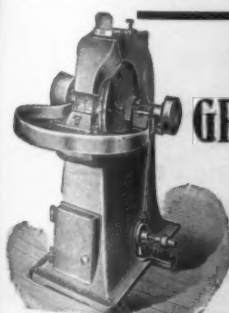
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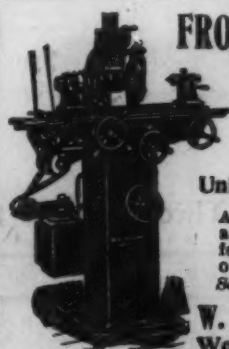
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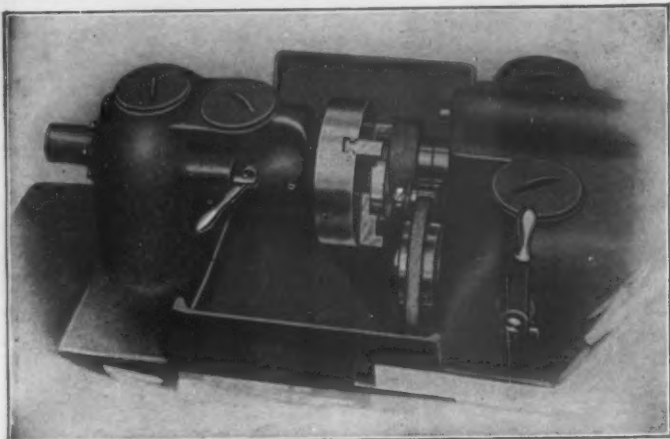
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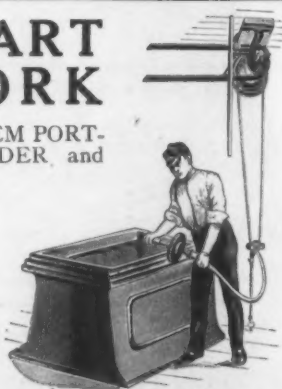
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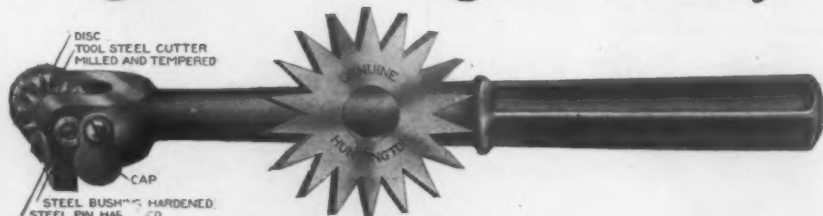
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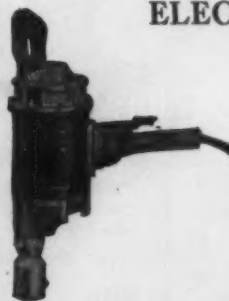
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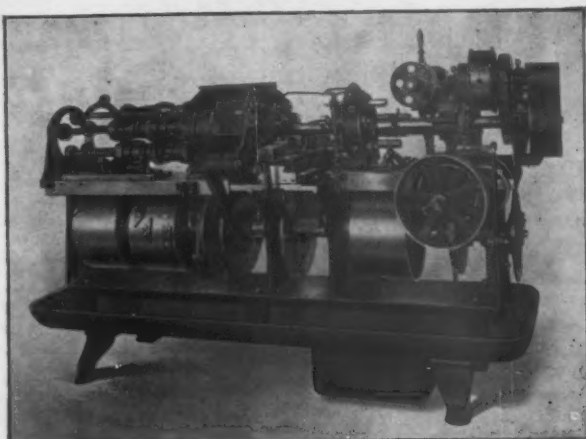
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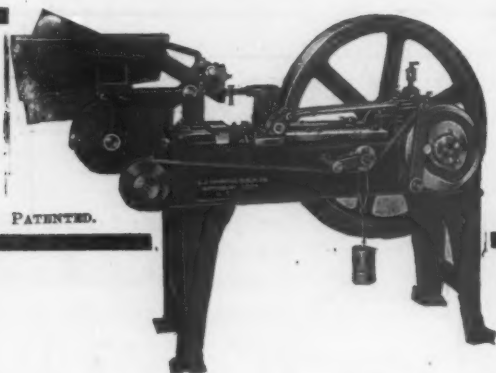
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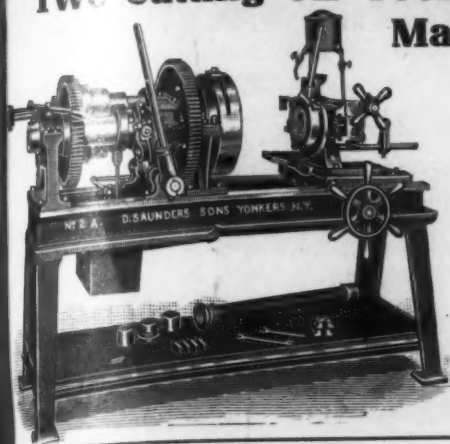
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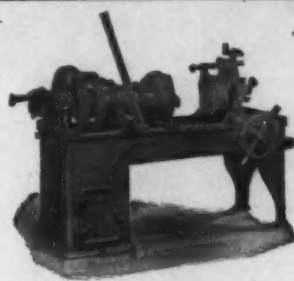


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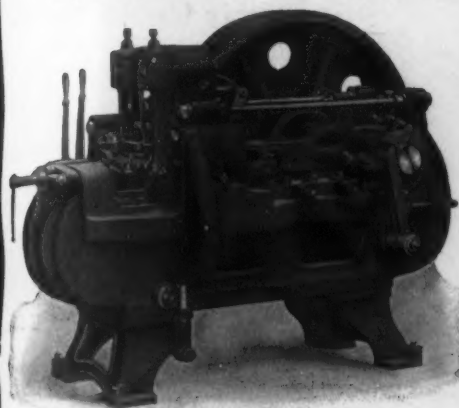


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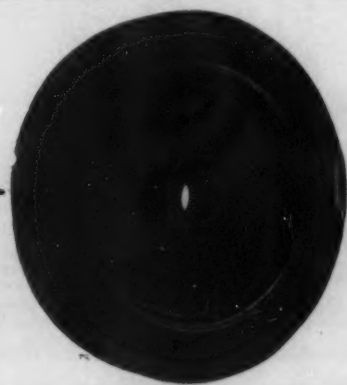
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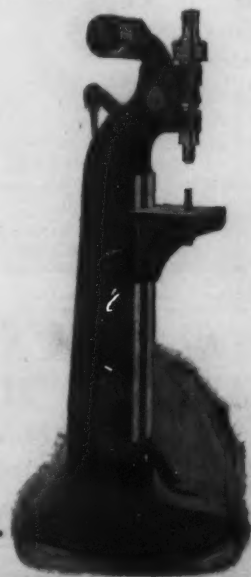
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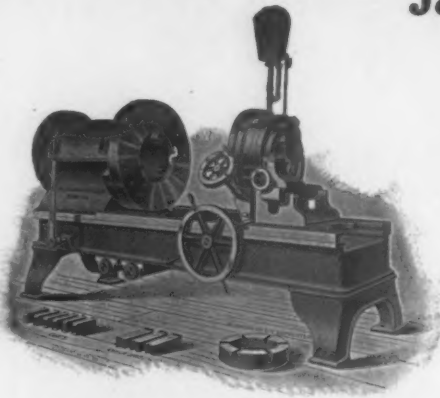
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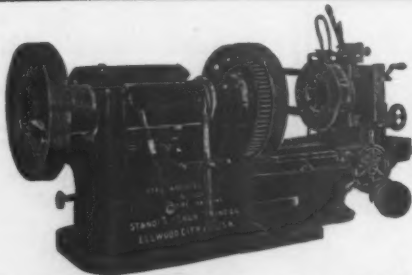
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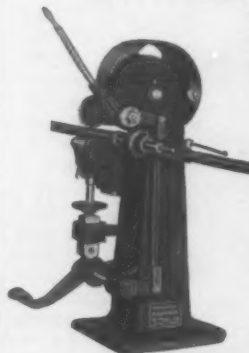
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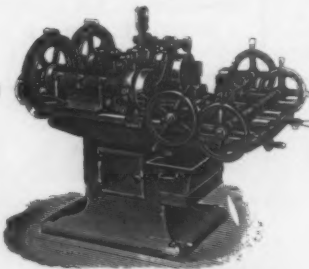
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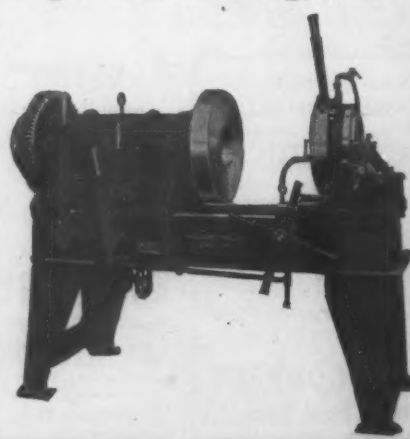
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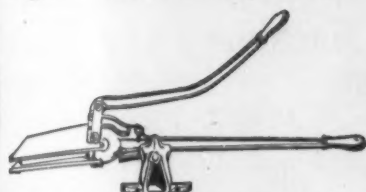
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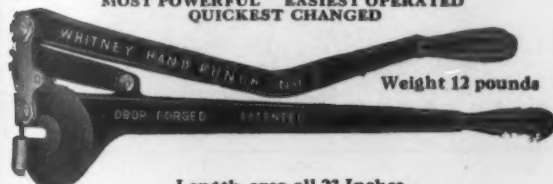
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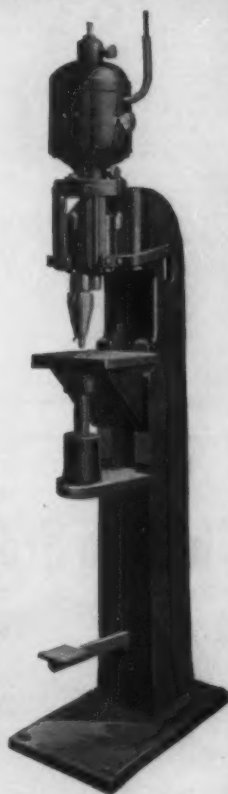
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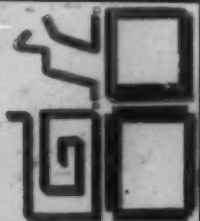
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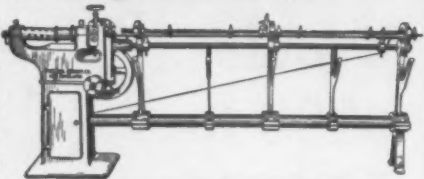
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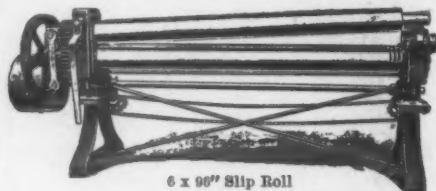
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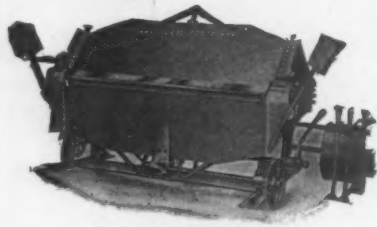
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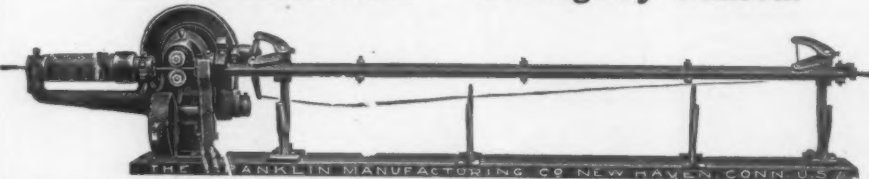
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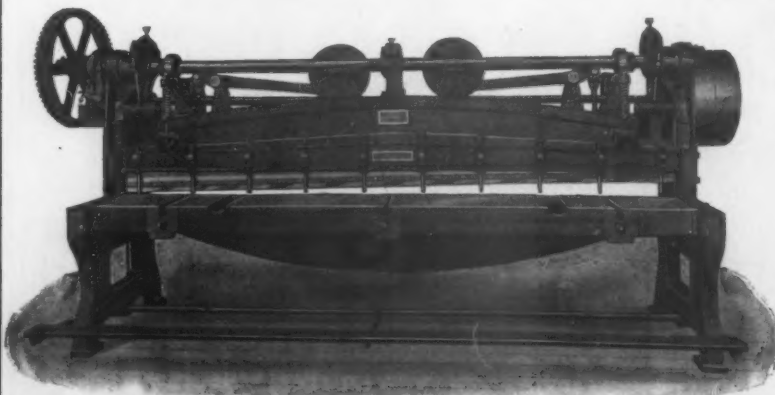
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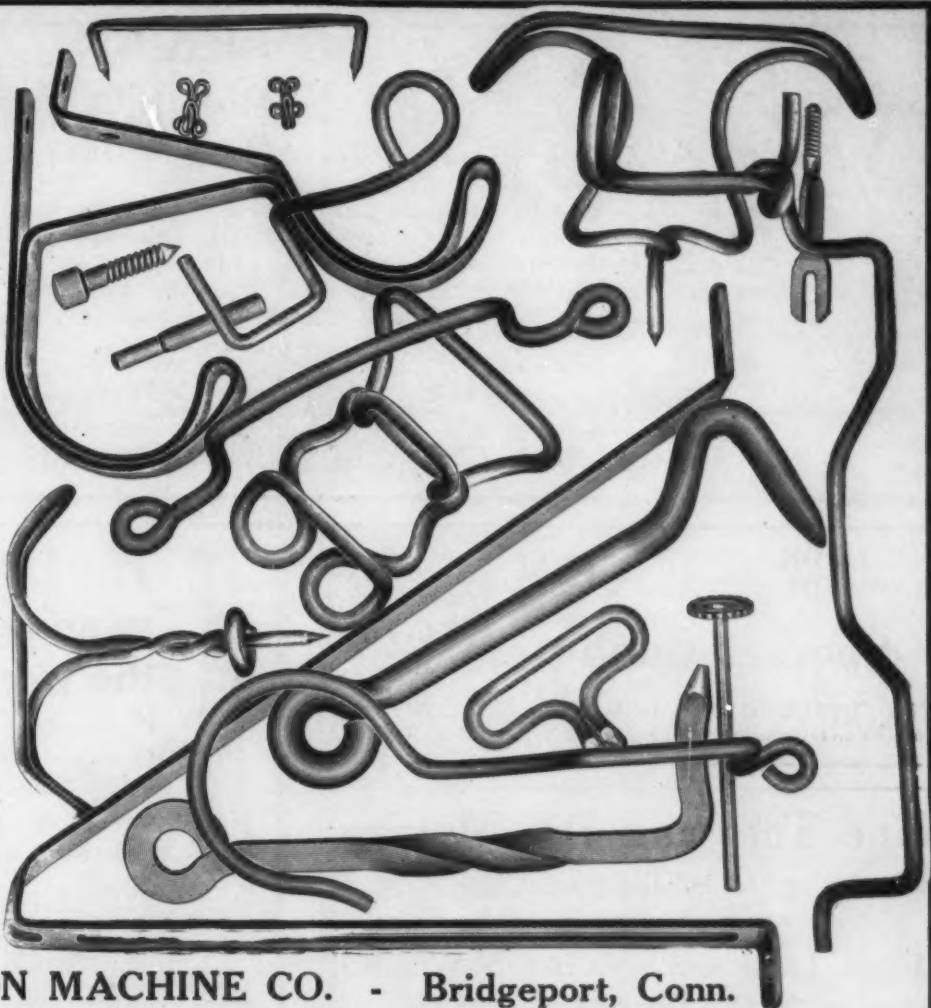
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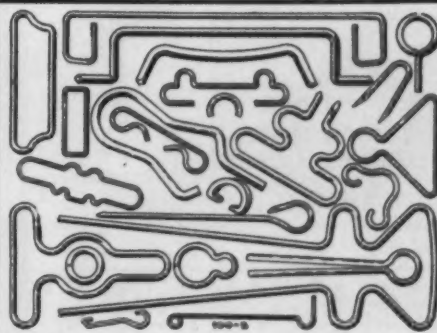
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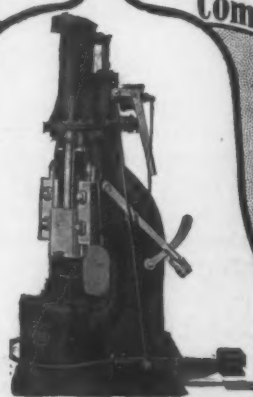
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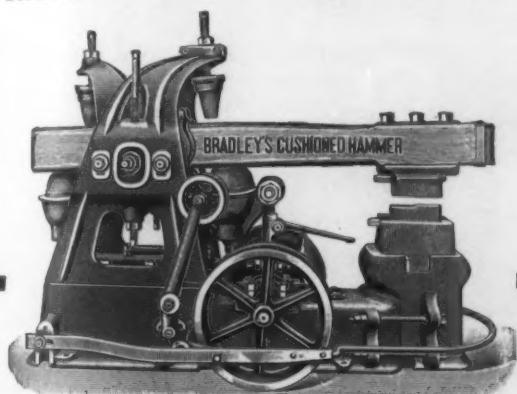
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cost less than any capable of producing an equal amount of work.

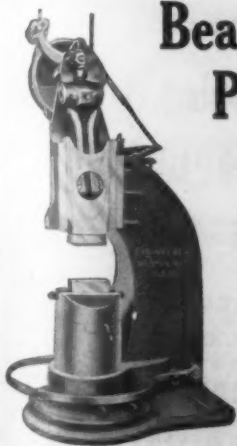
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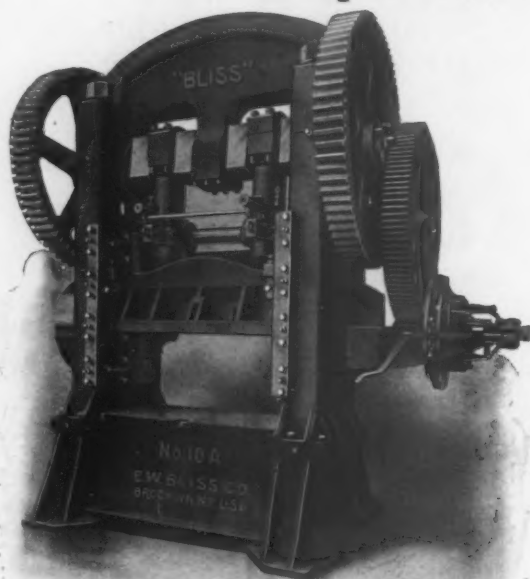
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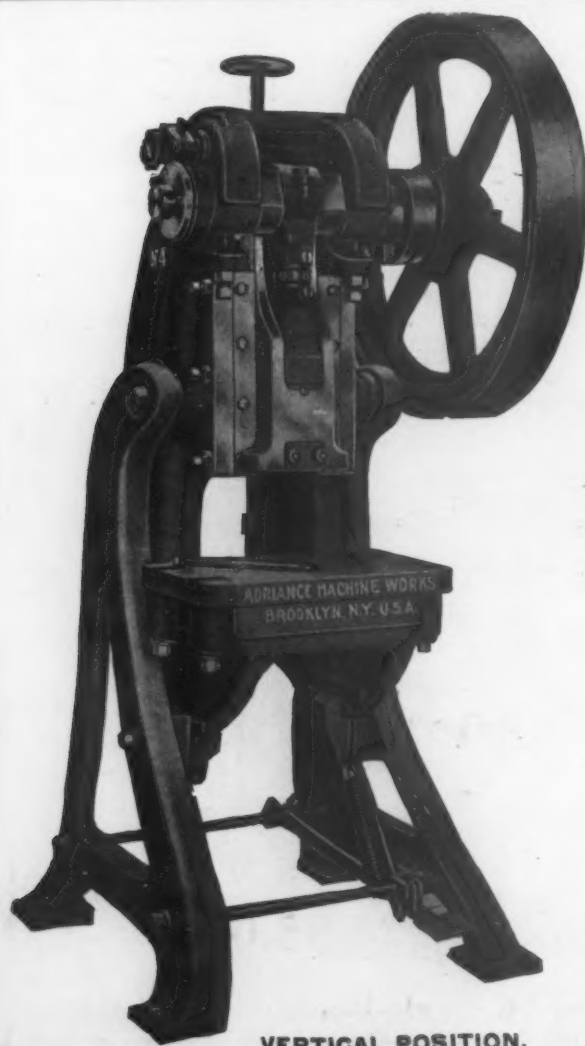
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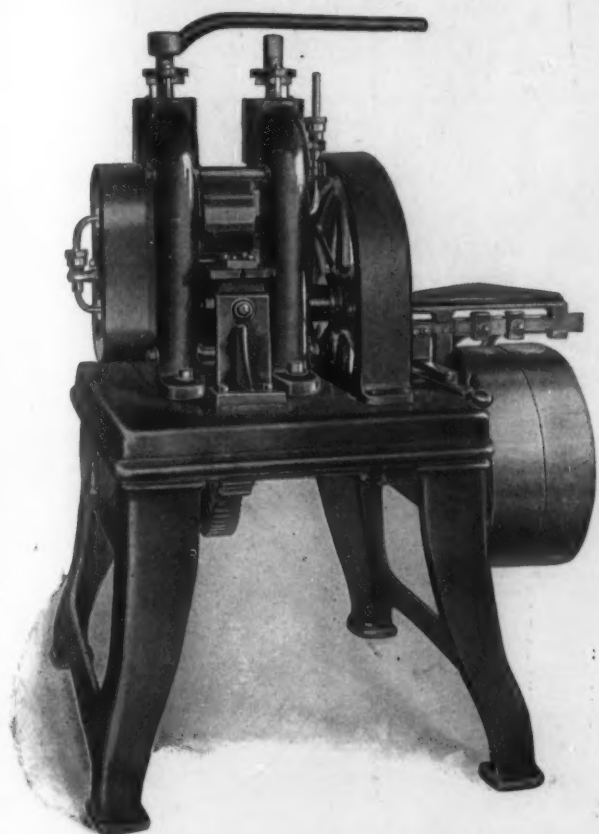
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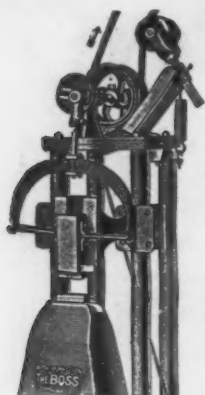
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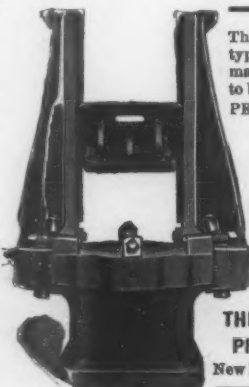
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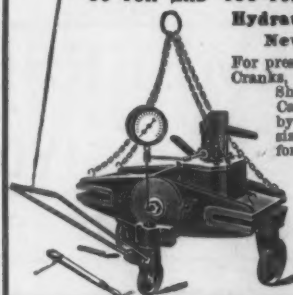
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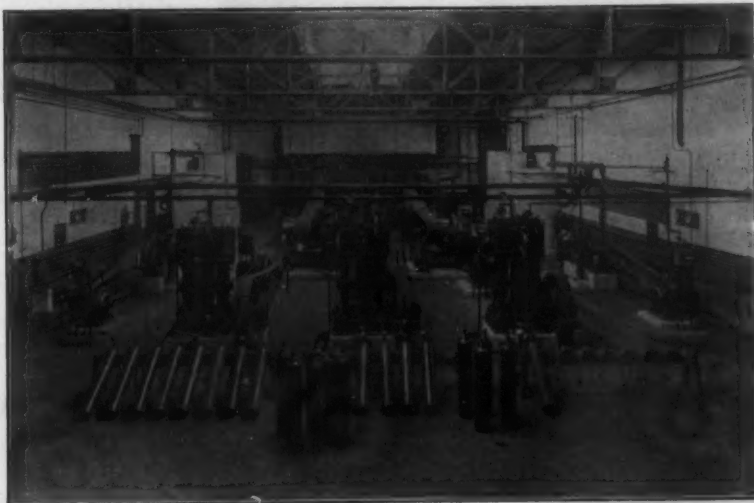
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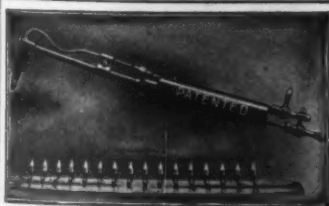
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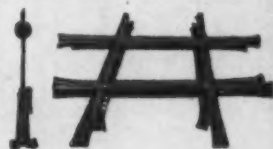
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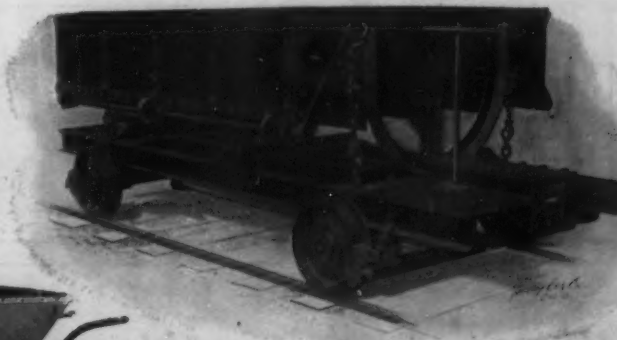
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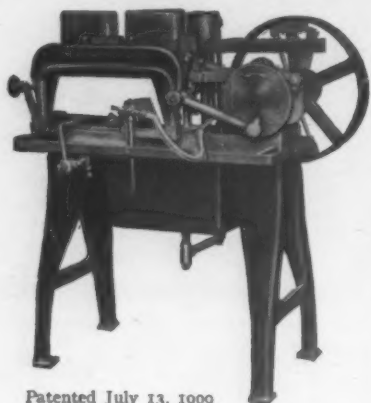
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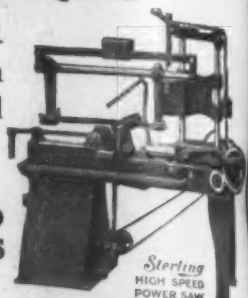
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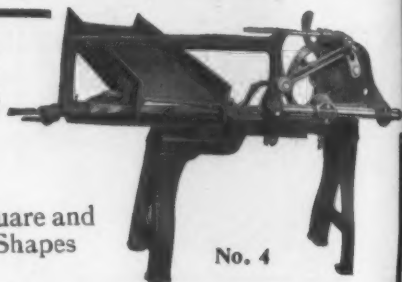
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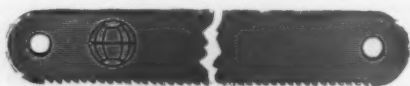
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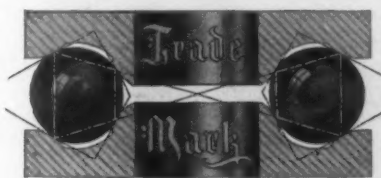
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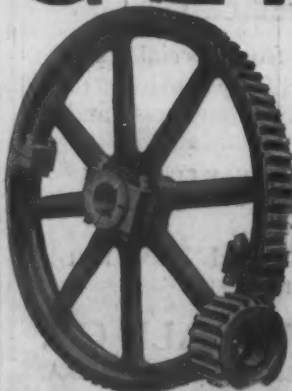
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